

5633 1937
Archives QH 76.5.S6 U5 Pt. 2
United States. National Park
Service.
Southwestern
Monuments; monthly reports

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UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

SOUTHWESTERN MONUMENTS
MONTHLY REPORTS
July - December 1937

*To Be Bound
For Southwestern Monuments,
Coolidge, Arizona.*

SOUTHWESTERN MONUMENTS

MONTHLY REPORT

JULY, 1937



DEPARTMENT OF THE INTERIOR
NATIONAL PARK
SERVICE

FOR THE YEAR 1907

ANNUAL REPORT

1907



DEPARTMENT OF THE INTERIOR

ANNUAL REPORT

1907

SOUTHWESTERN MONUMENTS

JULY, 1937, REPORT

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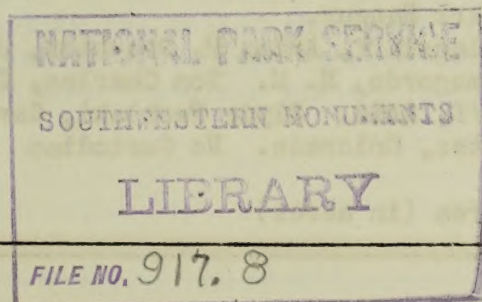
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SOUTHWESTERN MONUMENTS

PERSONNEL

HEADQUARTERS, Southwestern Monuments, Coolidge, Arizona: Frank Pinkley, Superintendent; Hugh M. Miller, Assistant Superintendent; James Luther, Chief Clerk; J. H. Tovrea, Assistant Engineer; Dale S. King, Assistant Park Naturalist; Charlie R. Steen, Jr. Park Archeologist; Millard Singerman, Clerk-Stenographer; Luis Gastellum and W. H. Sharpe, ECW Clerks; James W. Brewer, Roving Ranger; Gertrude Hill, Student Technician.

FIELD STATIONS

AREA (acres)

1. <u>Arches</u> - Moab, Utah. J. M. Turnbow, Cu.	4,520
2. <u>Aztec Ruins</u> - Aztec, N. Mex. T. C. Miller, Cu.	25.88
3. <u>Bandelier</u> - Santa Fe, N. M. C. G. Harkins, Cu.	26,026.20
Jerome W. Hendron, Woodrow Spires, and Donald J. Lehmer, Temporary Park Rangers.	
4. <u>Canyon de Chelly</u> - Chin Lee, Ariz. Johnwill Faris, Cu.	83,840.
Alfred Peterson, Temporary Park Ranger.	
Thomas B. Onstott, " " "	
5. <u>Capulin Mountain</u> - Capulin, N. M. Homer J. Farr, Cu.	680.37
6. <u>Casa Grande</u> - Coolidge, Ariz. A. T. Bicknell, Cu.	472.5
J. Donald Erskine, Park Ranger.	
7. <u>Chaco Canyon</u> - Chaco Canyon, N. M. L. T. McKinney, Cu.	21,512.37
Homer Hastings, Temporary Park Ranger	
8. <u>Chiricahua</u> - Douglas, Ariz. Frank L. Fish, Cu.	4,480.
Homer Bennett and Bronson Harris, CCC Guides	
9. <u>El Morro</u> - Ramah, N. M. Robert R. Budlong, Cu.	240.
10. <u>Gila Cliff Dwellings</u> - Cliff, N. M. No Custodian	160.
11. <u>Gran Quivira</u> - Gran Quivira, N. M. Geo. L. Boundey, Cu.	610.94
12. <u>Hovenweep</u> - Cortez, Colo. No Custodian	285.8
13. <u>Montezuma Castle</u> - Camp Verde, Ariz. Earl Jackson, Cu.	560.
14. <u>Natural Bridges</u> - Blanding, Utah. Zeke Johnson, Cu.	2,740.
15. <u>Navajo</u> - Kayenta, Ariz. John Wetherill, Cu.	360.
Milton Wetherill, Senior Laborer	
16. <u>Organ Pipe Cactus</u> - Ajo, Ariz. No Custodian	330,670.
17. <u>Pipe Spring</u> - Moccasín, Ariz. L. Heaton, Acting Cu.	40.
18. <u>Rainbow Bridge</u> - Rainbow Lodge, Ariz. No Custodian	160.
19. <u>Saguaro</u> - Tucson, Arizona. No Custodian	63,284.
20. <u>Sunset Crater</u> - Flagstaff, Ariz. No Custodian	3,040.
21. <u>Tonto</u> - Roosevelt, Ariz. Irving McNeil, Temp. Park Ran.	1,120.
22. <u>Tumacacori</u> - Louis R. Caywood, Cu. Box 2225, Tucson, Ariz.	10.
James Felton, Park Ranger.	
23. <u>Walnut Canyon</u> - Flagstaff, Ariz. P. Beaubien, Jr. Park Arch.	960.
24. <u>White Sands</u> - Alamogordo, N. M. Tom Charles, Cu.	142,987.
25. <u>Wupatki</u> - Flagstaff, Ariz. Clyde Peshlaki, Caretaker	35,865.30
26. <u>Yucca House</u> - Cortez, Colorado. No Custodian	9.6

Total Area (in acres)

724,659.96

CONDENSED REPORT

IN WHICH IS GIVEN THE HIGHLIGHTS OF THE MONTH

Cocclidge, Arizona
August 1, 1937

The Director,
National Park Service,
Washington, D. C.

Dear Mr. Director:

The Condensed Report for the month of July, 1937, follows:

TRAVEL

	<u>July, 1937</u>	<u>July, 1936</u>	<u>July, 1935</u>
Aztec Ruins	1,881	2,089	1,675
Bandelier	2,665	2,162	2,092
Canyon de Chelly	237	159	163
Capulin Mountain	6,000	2,500	5,000
Casa Grande	1,613	1,142	1,198
Chaco Canyon	1,026	929	672
Chiricahua	1,247	1,017	1,760
El Morro	383	415	381
Gran Quivira	417	281	950
Montezuma Castle	1,507	1,482	1,847
Natural Bridges	146	---	---
Navajo	---	133	86
Pipe Spring	185	406	930
Sunset Crater	1,212	1,177	909
Tonto	399	289	324
Tumacacori	1,157	818	712
Walnut Canyon	1,954	2,384	1,982
White Sands	12,421	12,406	4,755
Wupatki	341	321	268
TOTALS	34,791	30,110	25,710

A gain of 4,680 visitors, or 15.5 percent more than were reported in July, 1936, was mostly made up by an increase in travel to Capulin Mountain, where, unfortunately, we have no full-time personnel nor facilities except a road up to the crater. But sufficient other monuments showed increases to justify the belief that 1937 is a much better travel year than 1936. A striking difference is noted when 1935 figures are consulted; 35.3 percent more travelers visited the monuments in July than two years ago.

CONDENSED REPORT (CONT.)

010 MATTERS OF UNUSUAL IMPORTANCE

The Roving Ranger reports the Cajon group of ruins at Hovenweep National Monument much injured by water development work. Cavate rooms were removed, prehistoric stone used in constructing revetments, and sheep now clamber all over ancient walls.

123 VISITS BY NATIONAL PARK SERVICE PERSONNEL

Headquarters: Lyle Bennett, Everett Underhill, Richard Sias, John H. Haile, Jr., Wm. Stevenson, Clinton Rose, Kenneth B. Disher.

Aztec Ruins: D. J. Lehmer, Jack Diehl, Stanley Dinsmore, Chester Markley, Johnwill Faris.

Bandelier: Charles Richey, Jack Diehl.

Canyon de Chelly: James W. Brewer, Jr., Erik Reed.

Casa Grande: Chas. Wallace, R. Neil Grunegan.

Chaco Canyon: Robert R. Budlong, Jack Diehl, T. C. Miller, A. E. Borell, Chester Markley, W. W. Yeager.

Chiricahua: Richard Sias, John H. Haile, Jr., Lyle Bennett, Jack Diehl, Clinton Rose, George Cornell.

Natural Bridges: Hugh M. Miller, J. H. Tovrea, Charlie Steen, Chas. Richey.

Navajo: Hugh M. Miller, J. H. Tovrea, Charlie Steen, Chas. Richey.

Pipe Spring: Al Kuehl, M. R. Tillotson, Chas. Richey.

Tonto: Luis Gastellum, Al Bicknell.

Tumacacori: Lyle Bennett, L. Gastellum, Jack Diehl, Kenneth B. Disher.

Walnut Canyon: J. B. Hamilton, Dorothea J. Lewis, J. W. Faris, Milton Wetherill, Erik Reed, J. H. Tovrea, Hugh M. Miller, Charlie Steen.

125 OTHER VISITING GOVERNMENT OFFICERS

Aztec Ruins: Dr. E. P. Meinecke, Forest Service.

Bandelier: H. H. Bennett, F. G. Reimer, W. H. Manifold of the Soil Conservation Service, Washington.

Chaco: Dr. E. P. Meinecke.

Canyon de Chelly: Dr. E. P. Meinecke.

Casa Grande: Chas. Cunningham, Forest Service, Phoenix.

Pipe Spring: Ward, Nelson, and Carpenter of the Bureau of Public Roads.

Tumacacori: Fred Winn, supervisor of Coronado National Forest.

150 NEW EQUIPMENT

Aztec Ruins: New gasoline pump for water system.

Gran Quivira: Dump truck and hoisting apparatus for deep well.

210 MAINTENANCE, UNUSUAL

Mobile Unit for ruins stabilization started work July 7 at Chaco Canyon.

After camp is established and water supplies augmented, the Pueblo Bonito ruins will receive attention as to drainage, wall capping, and foundation strengthening.

Aztec Ruins: Heavy rains damaged the roof of the administration building requiring repairs not only to the roof but repainting of two walls.

Capulin Mountain: Much rain caused more than normal damage to the crater road which badly needs a retaining wall for cinders.

CONDENSED REPORT (CONT.)

Bandelier: Repairs to large kiva progressing nicely; fill and debris are removed from floor and rims sloped for drainage. Ground plan and section drawings under way.

Chaco Canyon: All ruins suffered much damage in heavy rains in July, the worst in history at Chaco. Floors were flooded and walls collapsed. The SCS dikes were somewhat damaged.

Chiricahua: A cloudburst July 19 took 75 feet of surfacing off the road at the headquarters parking area, damaged all roads and trails and blocked the Pinery Canyon road completely.

220 IMPROVEMENTS

Headquarters: Installation of an "Arizona Cooler" makes working conditions for the clerical force much more bearable. A partition was knocked out, enlarging working space and making the building more easy to cool.

Casa Grande: Sewer overflow wall was bricked up and cemented and a small workshop started.

Tumacacori: Electric system switched over to regular AC current and the new pressure water system put into use.

230 NEW CONSTRUCTION

Bandelier CCC

Garage unit of hotel to viga height.

Portal from gas and oil house to garage of hotel completed.

Hotel dining room and kitchen completed, including ceiling and roof deck, except for finish. Half of kitchen floors, rough plumbing and wiring, and some of kitchen cabinets finished.

Water intake completed except for connecting with outlet main to water line.

One hand-carved table completed and five hand-carved chairs started for use in Bandelier buildings.

Tumacacori Museum doors 75 percent complete.

Quarry and timber crews busy all month.

Chiricahua CCC

Rhyolite-Balance Rock trail advanced 1,150 feet.

Wildlife pool constructed in Hunt Canyon with excess materials from trail.

One fourth mile of Rhyolite trail maintained, due to damage of cloudburst July 19.

Two backsloping crews on Bonita highway sloped 500 square yards.

Much highway maintenance, including ditch and culvert clearance.

East wing of administration building to six foot height.

Masonry walls of basement entrance completed.

Rock quarry in operation all month.

CONDENSED REPORT (CONT.)

300 ACTIVITIES OF OTHER AGENCIES IN MONUMENTS

320 COOPERATING GOVERNMENT AGENCIES

Chaco Canyon: Indian CCC cooperating with Park Service CCC established Mobile Unit for ruins stabilization. See under "Maintenance, Unusual."

320 NON-GOVERNMENT AGENCIES

Chaco Canyon: School of American Research repairing Talus Unit No. 1 at Chetro Ketl. Three test holes dug on south side of Chetro Ketl.

350 DONATIONS AND ACCESSIONS

Aztec Ruins: From Western Museum Laboratories at Berkeley: the exhibit for Case No. 7, including 1 key label, four paintings, nine display shelves, and two metal casts of animals.

Chaco Canyon: Large prehistoric beam specimen from Talus Unit No. 1 for inclusion in Tree Ring display.

400 FLORA, FAUNA, NATURAL PHENOMENA

At Capulin Mountain are more wild flowers and greater growth of vegetation than at any time in the last five years.

420 MUSEUMS

Casa Grande: Nine new cases temporarily installed with exhibits.

440 INSECT CONTROL

Bandelier: Web worm infestation not sufficiently serious this year to require spraying.

460 BIRDS

Bird banding activities at a standstill due to heat and abundance of natural food which keeps birds from traps.

Walnut Canyon: Turkey with poults seen July 4, the first in some years, due to lack of water on monument. Inasmuch as the canyon once held water before dams were placed above the monument, artificial means of watering the fauna should be established.

470 ANIMALS

Chaco Canyon: Rodent damage to vegetation reported. Wildlife Technician Borell estimates rabbits are ten times more numerous than a year ago.

El Morro: Surrounding farmers complain of damage to crops by rabbits foraging from the monument.

CONDENSED REPORT (CONT.)

480 MISCELLANEOUS

Cataloging of the Headquarters Loan Library progressed rapidly with 1,522 cards prepared for 186 books during July.

Informational circulars were prepared during the month on Organ Pipe Cactus National Monument and on Gila Monsters, the latter for the Douglas, Arizona, Chamber of Commerce.

600 PROTECTION

Cattle, wearing an unrecorded brand, and therefore of unknown ownership, continue to be a problem on the Detached Section at Bandelier.

620 FIRE PROTECTION

Bandelier: New telephone connection installed to better control fires in an isolated section near the monument.

On June 24 a one-acre fire on South Mesa between Alamo and Frijoles Canyons. Foreman and seven men controlled it in one day, and three men patrol worked 12 hours more.

Chiricahua: CCC lookouts have been praised by Forest Service officials for alertness in reporting fires before Forest stations.

650 SIGNS

Bandelier: Three new entrance signs placed in Detached Section.

Walnut Canyon: The second of two entrance signs put in place at junction of approach road and Highway 66. First month's use would indicate they are too small as visitors complain of having missed them.

MISCELLANEOUS

MAIL COUNT

Incoming:

Official	1,592	
Personal	836	
Total incoming		2,428

Outgoing:

Official only	1,798	1,798
Total postal mail		4,226

Telegrams:

Incoming	64	
Outgoing	56	
Total telegrams		120

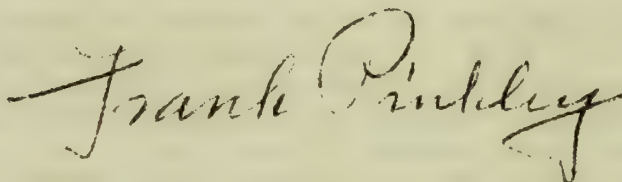
GRAND TOTAL PIECES OF MAIL HANDLED		4,346
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CONDENSED REPORT (CONT.)

OTHER OFFICE ACTIVITIES:

Direct Settlements	18
Vouchers for payment	216
Schedules of vouchers	52
Total of vouchers for month	\$24,105.20
Purchase orders issued	107
Collection Bills issued	23
Total of collections made	210.86
Allotment Ledger pages made up	195
Authorized expenditures for month	\$37,266.55

Cordially,

A handwritten signature in cursive script, reading "Frank Pinkley". The signature is written in dark ink and is positioned above the typed name and title.

Frank Pinkley,
Superintendent.

REPORTS FROM MEN IN THE FIELD

AZTEC RUIN

By Thomas C. Miller, Custodian

GENERAL

This report is going to be a hard one for me to make. If I understand monthly reports right, one is supposed to report the unusual happenings. Chaco Canyon suffered the loss of one of its best citizens, this month. Lena McKinney, wife of Custodian McKinney passed away on the 17th. Funeral services were held in Carlsbad on the 20th. Mrs. McKinney took sick on July 3, and was moved to the hospital in Gallup on that date. Two of the best doctors in Gallup were in charge of the case. Mrs. McKinney leaves three children, ages 10, 8, and 4. Lena is surely going to be missed, not only by the McKinney family but by her many friends, as she was an entirely unselfish person.

The weather for the month of July has been warm, but not too hot, as we have recorded some of the largest rains in history. The approach road to this monument was under construction part of the time this month, and naturally the appearance of the roads would keep out some of our visitors. Also the road was quite slippery during the first part of the month when the rains were recorded.

Our travel during the month of July is a little under last July, but when the new road is completed it will greatly increase our travel. Wolf Creek Pass has been closed the entire month and will probably be closed all summer, account of new construction.

Three trips were made to Chaco Canyon during the month. The Mobile Unit under supervision of Bob Harris is shapping up nicely. It is believed that this camp is going to do Chaco more good on ruins repair than anything we have ever started in that monument.

The School of American Research is doing some ruins repair on Talus Unit No. 1, Chetro Ketl. Several test holes have been dug at Chetro Ketl, on the south side of the ruins. All the ruins in Chaco and the Aztec Ruins suffered much damage due to heavy rains during the month.

WEATHER STATISTICS

Maximum Temperature -----	97	July 23.
Minimum Temperature -----	50	July 13.
Precipitation -----	2.55	Inches
Greatest amount in 24 hours-	1.39	Inches, July 10.
Clear Days,-----	14	
Cloudy Days -----	5	
Partly Cloudy Days -----	12	

AZTEC RUINS (CONT.)

BUILDINGS

On July 10 it rained almost an inch and one half in about 35 minutes. The administration building and the Great Kiva leaked quite badly in a number of places. It was necessary to repair the roofs of these buildings and repaint the walls of the two big rooms in the administration building. The custodian's residence has also received a new coat of paint. Our museum is now ready and waiting for the new cases that are being made at headquarters.

During the month we received from the Berkeley Office one crate containing exhibit for museum case No. 7 (panel with mounted water color drawings), one key label "Both Plants and Animals furnished." Four paintings (each double picture) titled as follows:

Hunting Deer and Skinning Deer.
Planting Corn and Grinding Corn.
Hunting Rabbit and Hunting Turkey.
Winnowing Beans and Gathering Pinon

Display shelves:

1 for arrow points
1 for rabbit stick. (No rabbit stick in Aztec collection)
1 for knives
1 for corn
1 for sage
1 for juniper
1 for beans
1 for squash
1 for piñon
2 metal casts of animals
1 antelope and one mountain sheep.

The above exhibit seems to create a lot of interest with our visitors. We have plenty of charts and paintings for our displays and when we receive the cases for our fine collection of pottery and other artifacts it will greatly simplify the handling of large crowds of people that visit this monument.

NATIONAL PARK SERVICE OFFICERS

Donald J. Lehmer, Temporary Park Ranger, Bandelier National Monument, visited here July 1. Regional Engineer Jack Diehl, from the Oklahoma City Office, was here on the seventh. Stanley Dinsmore and family from Petrified Forest were monument visitors on the 10th. Dr. Meinecke, Department of Agriculture, San Francisco, and Chief Ranger Markley, Mesa Verde National Park, were here on the 13th and 15th. Custodian J. W. Paris was here to meet Dr. Meinecke on the 15th.

AZTEC RUINS (CONT.)

NEW DEVELOPMENTS

A new gasoline pump was installed and added to our equipment list during the latter part of the month. The 550 gallon tank was on hand and the gasoline pump was purchased under equipment cost account 30.1 during the latter part of the fiscal year 1937.

PERSONNEL

One guide was employed the entire month, and it was necessary to employ another guide on the 18th due to the death of Mrs. McKinney, mentioned elsewhere in this report. It was necessary for the custodian to make a trip to Gallup and to Chaco Canyon on that date.

Wayne Karlin has been employed as guide under direction of Ranger Hastings until Custodian McKinney returns to Chaco. He is now taking some annual leave.

TRAVEL

1,881 people entered the monument in 527 automobiles coming from 44 states and the District of Columbia. Foreign countries represented were: Canada, Ireland, Mexico and Scotland. The above number of visitors were guided through the ruins in 285 parties, and the same number of museum trips were made.

o

From Mr. Miller's report we can see that he has been busy during the month and we might say here as a matter of general information that the cases for Aztec are finished at Headquarters and awaiting transportation to Aztec. By next month we hope they will be delivered and installed. FP.

*****000*****

CANYON DE CHELLY

By Johnwill Faris, Custodian

Perhaps it is the known month of rains, perhaps the dread of our Arizona heat, but call it what you may we have only 237 visitors for the month. This seems a very small number for July but we have had some rains that undoubtedly scared some away.

Late June and early July were unsettled and not many tried the canyons. Early this month a party from California and myself in going to Mummy Cave in Del Muerto plowed through water about eight miles. It is certainly anything but an easy feeling to come through water for any distance at all. A few days later two Government cars were left in the stream overnight due to water shorting the motors and then sinking in the quicksand. The next day we recovered one of the cars and it was not damaged at all.

The other was down over the hood. Several Indians were employed to dig it out and a few days later it was towed into camp with a two truck. No attempt has been made to operate it and it is doubtful if it will ever be of much service.

On the sixth Thomas Onstott arrived to assume his share of the work along with some of Pete's and my own when it comes to pick and shovel. I have not been able to get the work organized as I wish yet but things are moving along very well and both the boys are just on edge awaiting the assignment to that sewer job. We have Hommon's report and recommendations which both the boys have studied and it is hoped that we can get at that the first part of next week. Our funds will not allow any outside labor but Tommy and Pete are confident of being able to master the problem. The trail work we had hoped to do I am delaying for a time in the hopes that I might be able to talk some of the points over with some of the technical men from the Santa Fe office.

Close upon Tommie's heels came Jimmie and Sallie Brewer. I had the pleasure of meeting Jimmie last year at Casa Grande, but this is the first time I had met Sallie and I see now why so many people liked Wupatki.

The middle of the month I was called to Aztec to meet Dr. E. P. Meinecke of the Agricultural Department. We came back to Chin Lee over the mountain from Shiprock, stayed here a couple of days, and went to Kayenta, on to Monument Valley the next day to Betatakin and Flagstaff, where the Dr. took the train for San Francisco. It was a delightful trip without even a flat tire to mar the pleasure, and the graciousness of the Wetherills at Kayenta and the Gouldings at Monument Valley is without equal. I feel too that I should say a word about Milton and his ability as cook.

While John Wetherill was explaining some of the many features of Betatakin, Milton really put out a feed. The doctor, two daughter-in-laws of the late Hubert Bancroft, and myself really made short order of the spread. All in all, I am very much enriched by the trip and have only the highest praise for Dr. Meinecke as a traveling companion.

On my return from Flagstaff I stopped in a few minutes with Beaubien and found him to be just as pleasant as I have always heard. He was a splendid host and I regretted that I was forced to leave so soon. I have hopes of contacting many of these good people again and really seeing what they have to show. Milton and John tell me that "I aint seen nothin until I have been to Kit Siel." I am sorry that I did not get to take in Wupatki and Sunset Crater and find out the cause of the fever Jimmie has, but I had to cut out something and they came under the axe this trip.

Following Dr. Meinecke our own Eric Reed dropped in for a short visit and left the same afternoon. It being Peterson's day off he had to show Eric a point or two of our attraction. A sorta postman's holiday, as it were.

CANYON DE CHELLY (CONT.)

All in all, Boss, things are just fine in De Chelly. We have had some mighty fine people the past month and with the Ceremonial in Gallup the last of next month we are looking forward to many more equally as nice in August.

On my return from the trip with Dr. Meinecke, I was shocked to learn of the death of Mrs. McKinney. Lewis has the sincere regrets of our entire force. The many kind reports we have received regarding Mrs. McKinney make us realize how great the loss, aside from the fine wife and mother she must have been.

So closing July, Boss, we pass on to August with great expectations. The boys and myself extend out sympathies to your fellows down there in the heat. We would like to share some of our natural resources with you but to take them away from the setting would mean they could not be fully appreciated, so come up and enjoy them with us.

o

It should probably be noted here, in order to keep the record clear, that the two automobiles which had quicksand troubles in the canyons as described in Johnwill's report did not belong to our Service but to another Government service which is working in the canyons.

We are glad to hear that Tom Onstott with his bag and baggage arrived at de Chelly all right; he has worked for us at Tonto where it is a long hot trail up to the ruins, and now he will find a long hot trail down to the White House Ruins in Canyon de Chelly.

Sorry not to have been able to include the visitor's statistics for de Chelly this month. Next time you run low on those forms, Johnwill, stir the boys at Headquarters up with a special letter. As a general statement to the men in the field, don't trust to your monthly report for ordering materials and supplies; when the field reports are being received and worked up into the Monthly Report there is a hectic period around Headquarters and it is not time to pick out and fill orders from the field reports. F.P.

*****000*****

BANDELIER

By C. G. Harkins, Custodian.

VISITORS

Our visitors totaled 2,665, arriving in 705 cars from 45 states and 12 foreign countries, the District of Columbia and Alaska.

The foreign countries represented were: Italy, Austria, Belgium, Bahama Islands, East Africa, Rhodesia South Africa, Mexico, Brazil, England, Ireland, Scotland, and Poland.

BANDELIER (CONT.)

The six highest states by visitor count were as follows:

New Mexico -----	1,091
Texas -----	350
Oklahoma -----	166
Colorado -----	112
California -----	90
Illinois -----	66

192 guided trips were given averaging six persons to the party, and 90 minutes to the trip.

Total travel this year to date is as follows:

Travel to date -----	4,346
Travel for the month -----	2,665
Total for the year -----	7,011

RUINS REPAIR

Repairs to the large kiva has progressed nicely the past month under the direction of J. W. Hendron; his report is included with this one.

Weekly inspections have been made of the ruins in the Detached Section to insure there are no pot hunters molesting the ruins there.

ROADS AND WEATHER

Several good showers the first part of the month enabled us to put our roads in first class shape, with the exception of the Pojoaque wash, which has had water in it all month, and at times necessitated a wait of several hours. Two cars were stalled overnight July 10. At the present time our entrance road is in very good shape.

Ideal weather has prevailed the entire month, with a few hot days followed by showers and cooler weather.

Weather

Maximum temperature -----	104, July 14.
Minimum temperature -----	42, July 14.
Mean maximum -----	86
Mean minimum -----	56
Mean -----	72
Days clear -----	16
Days cloudy -----	6
Days partly cloudy -----	8

BANDELIER (CONT.)

SPECIAL VISITORS

June 28 - United Churches summer school group of 76 people from six states.

June 29 - Alden Jones, writer of articles about the Papago Vikita, which appeared in the Supplement to the Monthly Report for May.

July 4 - Donald D. Brand, head of the Department of Anthropology of the University of New Mexico.

July 5 - Paul, A. F. Walters, president of the First National Bank in Santa Fe; Mr. Walters worked here 28 years ago on excavations carried on by Dr. Hewett, director of the School of American Research of the Archeological Institute of America. Mrs. H. S. Kaune, Santa Fe, a cousin of Adolph Bandelier, after whom the monument was named.

July 11 - W. J. Holloway, lieutenant governor of Oklahoma, and party of five made a short trip through the ruins. Governor Tingley of New Mexico, and party of three were in but did not take a ruins trip.

July 12 - Col. La Flamme, and son, Fort Sam Houston, Texas.

July 15 - Governor Marland and Mrs. Marland, Oklahoma, made a trip through the ruins.

July 23 - Count and Countess Menicca, Naples, Italy.

NATIONAL PARK SERVICE VISITORS

July 7 - Mr. and Mrs. Chuck Richey, Santa Fe; Mr. and Mrs. Miller, Oklahoma City.

June 24 - Mr. H. H. Bennett, Mr. F. G. Reimer, and Mr. W. H. Manifold, of the Soil Conservation Service, Washington, D. C.

July 3 - Regional Engineer John H. Diehl, Oklahoma City.

July 15 - Mr. Kruger, landscape architect, from Mr. Richey's office.

FOREST FIRES

At 6:30 p.m. June 24, a fire was reported on the South Mesa between Alamo and Frijoles Canyons, a mile below the west boundary. Forester Fulton left immediately with a crew of fire fighters. The problem of getting to the fire proved more difficult than suppression. The area burnt was only one and a half acres. Rains the last month have lessened our fire hazard considerably, altho the forest cover is very dry at present.

BANDELIER (CONT.)

PERSONNEL

Donald J. Lehmer entered on duty at this monument July 3. He comes from the University of New Mexico where he is a junior in anthropology.

Mr. Woodrow Spires, temporary park ranger, was called to his home in Tempe, Arizona, July 12, due to the death of his father who has been in ill health for a number of years.

GENERAL

Three new entrance signs have been erected in the Detached Section on the highway. Cattle are still quite a problem there - they are all wearing unrecorded brands and no evidence of their ownership has been secured at the present time.

In a short time we will have one room of the museum ready for visitors. This has been rather slow in forming, but what we have will be a credit to our monument.

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We are very glad to have Cy tell us his museum will soon be ready to open to the public. We had hoped to get it open for the heavy part of this season but it looks like we will be disappointed in that.

The road to Bandelier will never be an all-weather road until the Pojoaque Wash is bridged. This is a State highway but for some reason the authorities are not expending sufficient funds to keep it in good condition. - F.P.

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BANDELIER CCC

By H. B. Chase, Project Superintendent.

Wall construction of the garage unit in the hotel area was completed this month to viga height at both ends of the structure. The longitudinal wall of this structure was purposely omitted to allow the transportation of materials into the hotel utility area. It is contemplated constructing the wall connecting the two ends early in the forthcoming month. In conjunction with this project a timber crew has been cutting and hewing lintels and vigas from adjacent forested areas to complete construction of this unit.

Portal construction, part of the gas and oil house unit, connecting the gas and oil house and the garage unit was completed this past month. The arrival of the gasoline pump and tank to be installed in the gas and oil house will allow installation in the near future, which will complete the building for final finish work. Door and window openings have been constructed and fitted in readiness for installation upon completion of

the floors.

Unit No. 1, dining room and kitchen of the hotel development area, now has been completed, including ceiling and roof deck construction. Within the next few days all parapet walls will be complete to plan height at which time the built up mopped roof will be installed, which will bring the unit to the part of only finish construction work. During the past month all rough plumbing and approximately one-half the kitchen floors have been completed, also the rough wiring and wire pulling has been completed in the entire unit. In conjunction with this project the carpenter crew has completed a portion of the kitchen cabinet units, in readiness for installation upon the completion of the kitchen floors.

The water intake project has been completed this month, there remaining only the outlet main to be connected with the water line service that supplies the entire canyon development. This connection will be completed immediately upon arrival of certain materials to make the connection.

In addition to the progress of the carpenter work in conjunction with the various building projects, the carpenter crew has completed one hand-carved table and considerable materials shaped ready of assembly of five hand-carved chairs for delivery and use in the monument and administration building. Also additional work has gone forward on the Tumacacori museum doors and at this time the carving is approximately 75 percent complete.

The fill or dump is now being screened for all artifacts in the Big Kiva of the ruins repair project. A ground plan drawing has been completed and work on sectional wall drawings has begun.

There has been a small crew of men in the rock quarry the entire month, quarrying and shaping stone for the various building projects.

A recently held company meeting informed the enrollees of this camp of those who were not eligible for reenrollment due to age and length of service in accordance with the new CCC act has emphasized in the minds of this personnel the serious proposition we will encounter about Sept. 30, the end of the present enrollment period. It is an unquestionable fact that our realization of the building projects at this camp has been in a major percent due to the experience and efforts of the older men, especially the LEM's, in assisting the foremen on their respective projects.

It is not only in the light of their ability of semi-skilled labor to perform a certain form of work, but also their presence by lending influence and help to the younger enrollees. In most cases these older men have been leaders and assistant leaders and through their assistance a

reasonable degree of efficiency has been maintained but with the realization that this class of help will soon be among those absent and the prospect of their replacement being young inexperienced boys certainly brings a discouraging picture as to our future progress in this type of work.

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The Bandelier CCC Camp, under the supervision of Hub Chase, is doing an excellent job on the hotel area construction, but he will be, as he says, hard hit by the present orders cutting off his local enlisted men. We have written you about this and if there is any way whereby this camp can be made an exception to that order it should be done. With our funds cut to the minimum we cannot hire skilled laborers or foremen and we just cannot see how we can get through on this long program of construction without the local enlisted men to guide the boys in the work.

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BANDELIER RUINS STABILIZATION

By J. W. Hendron

This month has been spent almost entirely on removing fill and debris from around the large kiva, and cleaning of the floor. The cleaning of the floor was an awkward job due to its disintegration. A boxelder, apparently about five years old, was growing to the north side of the kiva. It was removed as carefully as possible, but the roots imbedded in the floor and extending for about six feet in all directions ruined a large portion of the floor. This can be repaired, however. Seasonal rains have also brought on undesirable effects, making it difficult to distinguish between debris and plaster.

Several outcroppings of stones in the floor of the structure appeared as settings for the roof supports. At this writing I am convinced that they are the post holes because of flat stones in the bottom of them. Three of these holes are to the north side, about four feet from the wall, and on the south side are three additional ones about the same distance from the wall, making a total of six. The three on the north side and one on the south have smooth flat stones set in the bottom and surrounded by chunks of ash and basalt set in an upright position to form a sort of a cup for filling with stones and mud, thus holding the uprights tightly in place. Two of the post holes to the south have no stones setting in the bottom but just a hole tapering down to a point, and with stones placed in an upright position around them. At the present time it appears that there were three main vigas for the roof supported by posts from the inside of the kiva. It is planned to show the method of roofing in a subsequent report.

The removing of fill and debris from around the outside of the structure seems to be the biggest task. At the present time it is almost completed and screening has begun, to remove all artifacts before backfilling.

BANDELIER RUINS STABILIZATION (CONT.)

A considerable number of potsherds have been recovered and sacked and it is hoped that when analyzed they will reflect a true picture of at least part of the ceramic history of the Frijoles Canyon dwellers. A considerable amount of the fill removed will be used to stabilize the secondary or outside wall of the structure, that is, building it up high enough on the inside and sloping it to the outside so that there will be no drainage into the kiva.

While making a more thorough cleaning of the floor, what appeared to be the sipapu or ceremonial entrance from the underworld, was found two feet six inches in a northeasterly direction from a center point in the floor. It was a block of tuff seven inches long and almost six inches wide and appeared to be about four inches thick, although it was not removed from the floor. In the center was a hole ground out to a diameter of nearly three inches at the top and narrowed down to two inches at the bottom. The hole extended through the slab. Hewett in "The Excavations at Tyuonyi, New Mexico, in 1908" says, "If there was an altar it probably occupied a place on the floor between the sipapu and the wall back of the fireplace, and was doubtless built in terraced form of stone and adobe, three or four feet wide, about a foot thick, and rising to a height of three or four feet. This conjecture concerning the arrangement of the altar is based on what is to be seen in similar sanctuaries now in use in various pueblos of the Rio Grande valley. It is not to be accepted as conclusive, for in the three kivas excavated by us in the Rito, the altar, if it ever existed, has disappeared." The floor at this point was very carefully cleaned. Although there were some outcroppings of small stones, the outline of the altar never came to light. The sipapu in this case is almost in the center, while in the so-called Sun Kiva in the cliffs it is placed to the northeast and not more than 36" from the wall.

At present a ground plan drawing of the kiva has been completed in pencil and drawings of the walls are in process.

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This is an interesting report from Mr. Hendron.

As his work progresses we hope to build up a series of these reports which can eventually be compiled into a Special Report on Bandelier Ruins Stabilization. - F.P.

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BANDELIER FORESTRY

By James T. Fulton, Forestry Foreman

General forest fire situation: From June 23 to June 27 a total of 2.09 inches of rain fell. That amount and .95 inches which fell between July 1 and 10, served to make fire danger at Bandelier very small. However, during the past two weeks duff and litter has been dry enough that we have been on the alert for fires.

BANDELIER FORESTRY (CONT.)

On June 24, we had a fire one acre in extent on the north rim of Alamo Canyon. A control crew of seven men was used for one day and two patrolmen with myself were busy mopping up for the next 12 hours when a rain occurred which completed the work.

Fire Prevention and Presuppression: On June 30, I installed a telephone at a point south of Alamo Canyon where the Forest Service telephone line crosses the Stone Lion's trail. It is enclosed in a box and locked with a seal and padlock. A switch in the line permits the telephone to be kept out of the line so that no "line drag" will occur. It is expected that this telephone will improve communication between fire crews and headquarters when fires occur south of Alamo Canyon where travel time is necessarily high.

Insect Control Program: Our web worm infestation is proving to be quite mild this year. Occasional trees have a few webs just now beginning to show. In the years previous to 1935 and thus before my time, it seems that the infestation was in full swing by the latter part of June. In 1935 the worms were hatching about July 1. In 1936 they were about a week later in hatching and the defoliation amounted to considerable less than in years previous. From present appearances I would judge spraying to be unnecessary this year. My conclusion is that the infestation reached a peak during 1934 and 1935 and is now almost to the end of its cycle.

Miscellaneous: This month I have had a crew cutting a few lintels for the hotel development. Starting July 21, I began cutting timber to be converted into lintels and vigas for the hotel development. It is planned to cut enough to finish the project. All of this timber is being obtained from the Ramon Vigil Grant by authority of the SCS.

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CAPULIN MOUNTAIN

By Homer J. Farr, Custodian

More travel this month than we have ever had before - I estimate almost 300 daily which makes a total of about 8,000 visitors for the month. Our recent travel comes from a more widespread territory than before. In months past I have noticed 80 percent of our travel comes from Texas and Oklahoma, but this month I have seen many cars from almost all the states and several provinces in Canada.

Today a fellow from the Brownsville, Texas, district representing a group of South Texas newspapers is writing a story concerning this monument. The custodian has been busy this morning answering questions concerning the roads to and from, the height, the size, when it last erupted, and when the custodian expects another eruption.

The weather ~~man~~ has been good to us this month - some good rains, considerable real warm weather and very nice quiet sleeping nights.

CAPULIN (CONT.)

The road to the top of the crater is in good condition all the time, altho I have had to maintain the road twice this month, because of heavy rains and a continuous slough of cinders into the road. Goodness, how we need that retaining wall to save this extra maintenance work.

The mountainside has been a riot of beautiful wild flowers all spring and summer and they are still blooming in profusion. All vegetation on the monument is growing more this summer than for more than five years. We have some very gentle and lovely does and fawns with us, more birds, rabbits, squirrels and other wildlife than ever before, apparently Nature advised them we would have a bounteous crop of "flora" this season.

The custodian's son, Lloyd, was married to Betty Brown in Houston, Texas, on July 11. They will probably make their home in Houston as Lloyd is employed there by the Crown Refining Company of that city.

The custodian's home has been a sort of stopping and stamping ground for many friends from Oklahoma, Kansas, Texas, and Missouri, this month. I think they come here to get away from a 110-degree temperature and "kinda like" our 85 here in July, and especially our 60-degrees at night, "Where they can really sleep."

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We add our word to what Homer says about the need for a retaining wall on the inside of his road to stop the cinders from sloughing down and filling his roadway. We don't seem able to get the engineers and landscapers to agree upon what should be done. In the meantime the mountain goes on unravelling. - F.P.

*****OOO*****

CASA GRANDE

By Albert T. Bicknell, Custodian

WEATHER

Days clear -----	19
Days part cloudy -----	9
Days cloudy -----	2
Maximum temperature -----	117 degrees on July 2.
Minimum temperature -----	64 degrees on June 25.
Precipitation -----	.95 inch on July 7, 9, and 10.

GENERAL

Travel fell off considerably during the month, but the figures still show quite an increase over the corresponding period of last year, and from the guiding standpoint it seems as though we are having nearly as many trips through the ruins but the number of persons per party is lower than at other

seasons of the year.

Of our total of 1,613 visitors to the monument, 1,392 were contacted, leaving 221 persons to be accounted for by picnic parties and those visitors who simply drive in and look from their cars. But even if we were to omit counting the 221 persons we would still be 250 ahead of July of last year. A noteworthy feature of our travel is the high percentage of out-of-state visitors we are having. Usually during the hot weather we have mostly local people, but this year the dudes seem to be on the road in spite of the heat. Visitors during the month came from 35 states, Washington, D. C., Canal Zone, Canada, New Zealand, and Germany. It seems to the writer that the class of visitors this year is somewhat above that of last year.

On June 29 Irving McNeil started helping with guide work until July 2 when he was sent to Tonto National Monument as temporary ranger. On July 1 Eugene Stonehocker entered on duty as mechanic to be in charge of all of our numerous broken-down vehicles. It is now hoped that our cars will operate more efficiently and consistently than heretofore when no one was responsible for them. Back from three weeks annual leave Ranger Don Erskine returned to duty on July 11.

The weather has been typical of summer with consistently high temperatures, thunder and lightning nearby nearly every evening, and an occasional shower. Nearly every evening threatening black clouds slide past us or can be seen in the distance, but very little rain has actually fallen here.

Use of Monument Facilities by the Public

Total travel: 1937 --- 1613; 1936 --- 1142; 1935 --- 1198.

Of the 1,613 visitors to the monument 1,392 were contacted on guided trips through either the ruins or the museum or both. 7,047 minutes were spent guiding 212 parties through the ruins for an average time of 33.2 minutes per party. 3,353 minutes were spent guiding 166 parties thru the museum for an average of 20.2 minutes per party. As usual many visitors availed themselves of the picnic grounds. There was one overnight camping party.

The Coolidge Lions Club held a steak fry in the picnic grounds on the evening of July 20. Julian Hayden and 20 CCC boys from Phoenix were visitors and picnickers on July 11. On July 7, 37 visitors arrived in 14 cars all part of the Texaco Test Fleet #7 touring every state in the Union.

Newsworthy Visitors

National Park Service visitors to headquarters included: Associate

CASA GRANDE (CONT.)

Landscape Architect Lyle Bennett; Engineer Everett Underhill; ECW State Inspector Richard Sias; John H. Haile, Jr., who is replacing Mr. Sias; Project Superintendent Wm. Stevenson from Chiricahua National Monument; Clinton Rose, landscape architect; and Associate Museum Expert Kenneth Disher from Washington, D. C. Park Service visitors to the monument include: Charles Wallace and R. Neil Grunigen, both engineers at Sequoia National Park.

Other newsworthy visitors include: H. Arden Edwards, director, Antelope Valley Indian Research Museum, Lancaster, California, who promised to send us a picture of the Casa Grande before any repair work was started on it; Charles Cunningham of the Forest Service Phoenix office; Paul and Robert Martin and Carl Lloyd, all of the Field Museum, Chicago.

Improvements

On June 30 Doc Gipe finished building the new museum cases, and they have been placed in the museum temporarily until the naturalists can get around to installing the exhibits in them properly. On July 1 work was started on an Arizona home-made air cooler for the headquarters office which was completed a few days later; the cooler has made the headquarters a much more pleasant place in which to work. Another improvement for the headquarters office was accomplished between July 10 and July 14 with the removal of a wall between the clerks' room and the naturalists' room thus creating one large room for the sole use of the clerical force, the naturalists having previously moved to other offices. This is a very great improvement and seems to be much appreciated by the men working in that room.

During the month it was found necessary to replace a 35 amp. unit in the master switch with a 50 amp. unit. Another improvement during the month was the bricking up and cementing over the sewer overflow well.

With the appointment of Eugene Stonehocker as mechanic a small workshop has been set up in the garage, which will serve until such time as better housing facilities are available. Most of the workshop equipment has arrived.

NATURE NOTES

On June 26 the first brood of quail for the season was observed. There were 11 chicks. Since then other broods have been seen. Several days during the month a large Western Whipsnake and a large Gopher Snake have taken turns frightening visitors in the Casa Grande as they hunt the cracks in the building for bats. Three more buds on our Night Blooming Cereus plants opened during the month and were of much interest to all. After a heavy rain the morning of July 11 found what seemed to be millions of large flying ants swarming all around and in the Casa Grande. They were mostly dead by the next morning. That same day many large millipedes were seen crossing our entrance road.

CHACO CANYON

By Homer F. Hastings, Park Ranger

We have all been saddened by the death of Mrs. McKinney, who passed away on July 17 as the result of complications arising from an operation. She was taken to Gallup on July 2 in a serious condition and remained there until the time of her death. Since Mr. McKinney has gone to Carlsbad, New Mexico, where the funeral is being held, I shall submit this report.

PERSONNEL

On July 20 W. A. Karlin arrived from Aztec having been sent here by Custodian T. C. Miller. Mr. Karlin will assist in guiding the visitors until Mr. McKinney's return.

TRAVEL

The heavy rain July 11 tended to decrease the number of incoming cars from the north. Travel from that direction has further been decreased by the closing of Wolf Creek Pass for an indefinite period to permit the construction of a new road. Our travel count shows 366 cars brought 1,026 visitors, who came from 20 states, the District of Columbia, Mexico, and England.

WEATHER

Maximum temperature of 98 degrees was recorded on July 21. Minimum of 49 degrees was recorded on July 19. Total precipitation for the month amounted to 1.81 inches. On July 11 we had a cloudburst during which 1.32 inches of rain fell, the most of it coming within three-quarters of an hour. Water in the Chaco Wash flowed to a depth of 2.2 feet. This dwindled to an average flow of six inches which continued for the two succeeding days.

NEWSWORTHY VISITORS

June 28 Dr. and Mrs. John D. Clark made a short visit to the monument. Dr. Clark is head of the chemistry department at the University of New Mexico.

The same day Mr. and Mrs. O. S. Halseth and son were visitors. Mr. Halseth is in charge of Pueblo Grande near Phoenix, Arizona.

Dr. W. C. Holden, head of the departments of history and anthropology at the Texas Technological College, arrived on July 8 with a party of 16 students who were making a field trip from their base camp at Glorieta Pass. After staying overnight the party departed from here on their way to Aztec Ruins and Mesa Verde.

Mr. Jesse Peter and family visited the monument July 18. Mr. Peter is curator for the Santa Rosa Junior College Museum in California.

CHACO CANYON (CONT.)

Dr. and Mrs. John Yak Keur (Dot and John) arrived on July 21. Dr. Keur expects to resume his studies of Threatening Rock.

National Park Service Visitors

Custodian Robert R. Budlong, July, 6, from El Morro.

Regional Engineer John H. Diehl, July 7.

Custodian T. C. Miller, Aztec Ruins, July 9, 18, 21.

Dr. E. P. Meinecke (Dept. of Agriculture) and Chief Ranger Markley of Mesa Verde, July 14 and 15.

Mr. and Mrs. A. E. Borell, district wildlife technician, July 18 and 19
District Forester and Mrs. W. W. Yeager, and daughter, July 19.

Cooperating Government Agencies

Mr. and Mrs. Robert S. Harris reached this monument July 7 to establish a CCC Mobile Unit. Since his arrival he has had a crew of men digging a trench for a water line from the government well to the custodian's residence and on to their camp site, which will be east of Bonito in the area enclosed by the fence around the ruins. The cloudburst washed out part of the south approach to the bridge across the Chaco and caved in the top of the cesspool. This damage was quickly repaired by the CCC workmen.

Activities of Other Agencies

Excavation at Talus Unit No. 1 was resumed June 22 by Miss Margaret Woods of the School of American Research. Repair work at that ruin is being carried on under the direction of Miss Dorothy Luhrs of the same institution. Approximately three rooms have been excavated in which were found a number of restorable pieces of pottery. The south wall of Chetro Ketl was exposed by three test pits which were dug to determine the extent of the moat along the outer wall.

Preparations are under way for the General Field Session of the Department of Anthropology of the University of New Mexico. Sixty students are expected to attend this session.

WILDLIFE

Both Mr. Yeager and Mr. Borell observed that rodents, especially rabbits, were doing considerable damage to the vegetation. Mr. Borell estimated that the rabbits were now ten times more numerous than they were a year ago.

Following the rain a multitude of toads made their appearance and started a chorus which continued for days. Now that the puddles have dried up, they have all disappeared.

CHACO CANYON (CONT.)

GENERAL

Old timers tell us the cloudburst we had July 11 was the worst they have ever seen in this region. A huge water fall poured over the cliff behind Pueblo Bonito and overflowed the dyke constructed by the S. C. S. Both the dyke and the water drop near Kin Kletson were considerably damaged. Since the S. C. S. terminated their work here June 30, we do not know how soon these can be repaired.

The floors of many rooms and kivas in the pueblo were flooded and small sections of wall collapsed in several places. Damage was also done at Chetro Ketl where water stood to a depth of two feet in the most recently excavated kiva.

Considerable difficulty was encountered in taking measurements of the movement of Threatening Rock. I found there was a possible variation in the measurements depending upon the exact point at which the gap between the mark in the rod and the end of the pipe was measured. I feel we are in need of a more precise method as well as a uniform system for taking the measurements.

I have been fortunate in obtaining a large prehistoric beam specimen from Talus Unit No. 1. This fits in nicely with our present tree-ring data exhibits, and although it is rather badly disintegrated, I hope we can satisfactorily preserve it.

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Mr. McKinney has the sympathy of all the employees at Headquarters, and we are glad he had men of our Service near him to help in his hour of need.

I am sure we are all glad to welcome Dot and John Deur back into the Southwest for another little visit and we hope they will come on down through the country and see the rest of us. Last year they went off to Holland - a nice trip of course and fine for John to get home and see the folks - but we missed them and are glad to have them back. To any of our newer employees we might explain that Dot and John are on the staffs of a couple of Eastern universities, are ideal visitors and you will certainly enjoy meeting them, for they are real folks.

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CHIRICAHUA

By Frank L. Fish, Custodian

The weather has been varied during the month. From June 24 to July 4 daily rains in the vicinity kept things cool. This was followed by hot spells with some showers until July 19 when a heavy storm occurred in the evening, reaching cloudburst proportions in upper Rhyolite and Sara Deming

Canyons.

A large quantity of hail fell in this storm accumulating to the depth of four inches in places in Sara Deming. Rhyolite Canyon was a raging torrent for a few hours carrying large boulders with leaves and hail riding the crest which blocked the culvert on the Bonita Canyon Highway for a long enough period to flood the Headquarters Parking Area, and wash about 75 feet of the surfacing off of the road at that location.

The enrollees along with the rest of the locals congregated to watch the flood and one added a little humor to the occasion by mistaking the accumulated debris for a log and going in up to his neck for an icy bath but fortunately with no added ill effects. Since July 19 it has been warm and sultry with an occasional light shower.

Charles Warfield and Elijah Alton, two enrollees on the lookout, made a good record for the month reporting the only two fires in the neighboring Forest Service area ahead of the Forest lookouts. One, the night of July 22 at 9:15 p.m. in Rock Creek, could have been a bad fire by morning if it hadn't been for their watchfulness. Mr. Sykes, district forest ranger, complimented them on this fire. Due to their good work it was suppressed in 15 minutes by a fly camp in that area.

Approach roads are being improved and maintained in good condition for this time of the year with the exception of the Pinery Canyon road that was badly damaged by the cloudburst of July 19 and at the present time is still impassable as a number of culverts were washed out.

Monument roads have been maintained regularly during the month.

The backsloping along the Bonita Canyon road has improved the appearance greatly in ragged cuts that have been finished. With good moisture periods it should not be many years before the roadside has a cover of plants, trees and shrubs. The placing of extra materials along the outside slopes at least will serve as excellent catch basins for moisture and fine particles and aid the natural reproduction of plant life.

Visitors for the month numbered 1,247 coming in 279 cars and trucks. There were 24 states and Australia represented as against 24 states and 1,017 visitors for July of last year. There were not any large parties this month as reported for last month.

Park Service officials for the month included: Richard Sias, accompanied by Mrs. Sias and his nephew Tom Sias; John H. Haile, Jr., inspector trading places with Mr. Sias. Mr. and Mrs. Lyle Bennett, landscape architect; Mr. and Mrs. Jack Diehl, regional engineer; Clinton Rose, landscape architect and George Cornell, Regional landscape architect.

CHIRICAHUA (CONT.)

In a few months our administration building shall be completed and a display of the natural features of this monument will be in order. Personally, I do not consider my experience to be enough to warrant laying out the entire plans for such a display and as we have an educational division I take this opportunity to acquaint them that this space will be available for their best efforts.

"Boss", I should take offense in your statement in last month's report including Chiricahua as one of the "Hot Spots"; after all, the least elevation within the monument boundaries is a little more than a mile high and while we have hot days I believe the climate is cooler than at any other monument I have worked in, as Casa Grande, Tumacacori, Montezuma Castle, Chaco and Aztec. I also found it quite hot changing a tire at Tonto. The main reason for bringing this up is so some of my fellow workers will not get the wrong impression about the "Wonderland of Rocks."

I notice publicity items in many of the papers indicate some of the large parks have publicity men employed for advertisement purposes. It occurs to me that taken as a whole the Southwestern National Monuments make a good sized area as well as accounting for a large attendance each year. I also find that many people travel through an area and do not know just what they were or where.

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Due apology to Frank for calling his place a "Hot Spot". It isn't anything of the kind for it starts at a mile high and goes on up and everybody knows that the mile high cities of Denver and Prescott have lovely summer weather, so just class Chiricahua along with them. As a matter of fact, Frank, I think Charlie Steen's mind was elsewhere when that was written, but I'll accept the blame. - F.P.

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CHIRICAHUA CCC

By Wm. Stevenson, Project Superintendent.

The Rhyolite-Balanced Rock trail advanced 1,150 feet which carried through all the heavy work. Approximately one quarter mile remains to be completed in Hunt Canyon. A wild life pool was constructed in Hunt Canyon with excess materials.

One quarter mile of Rhyolite trail was maintained. On July 19 a cloudburst occurred in upper Sara Deming Canyon damaging several sections of the trail.

Two crews continued work on the backsloping project this month. Two hundred square yards of banks were sloped one half mile above Bonita Park and the materials were used in widening fill sections. 300 square yards of rock banks were sloped one mile above Bonita Park and all suitable materials were used for surfacing in the vicinity of Massai Point.

CHIRICAHUA ECW (CONT.)

Highway maintenance has been a project of major importance for the past week due to heavy storms. Ditches and culverts basins are being cleared and sections resurfaced.

The masonry walls on the east wing of the administration building were completed to a height of six feet and masonry walls to basement entrance were completed. Excavation for the basement of the employee's residence was 75 percent complete.

Work continued throughout the month on the rock quarry.

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The trail work at Chiricahua is approaching completion and I wish you could drop in there some time for a day and see some of those trails old Bill and his CCC crew have built. - F.P.

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EL MORRO

By Robert R. Budlong, Custodian

The month of July has nearly gone, and as yet we have not received notice of our appropriations for the new fiscal year, so we have been running the monument on a shoestring during the month. The shoestring has by now become badly frayed and thin.

VISITORS

During July 383 persons visited this national monument. Of these, 334 received guided trips. Total time spent, 5,745 minutes; total trips, 62; average time per guided trip, 92.66 minutes.

WEATHER

The rainy season is supposed to begin in earnest during July, but this year it didn't adhere to the usual schedule. We had about a week of light rains, but now the skies have been clear for days, everything is drying out, and nearby farmers report their corn and beans wilting. Rain is needed at once. Temperatures have been high, and many of our visitors have taken only short guided trips, due to the heat.

WATER

I know that this subject must be growing rather tiresome to read about, but it is growing far more tiresome to have to continue to drink what we politely term "drinking-water" from the pool. At the present time the custodian is experiencing marked symptoms of having absorbed some of the more insidious bacteria from the water. Certainly, however, the water should be nourishing, if nothing else, since it contains such

EL MORRO (CONT.)

a high content of animal and vegetable matter. The remarks made by visitors relative to this water are now accepted as part of the normal conversation of every party, but their remarks can not be included here.

WILDLIFE

Our visitors continue to take great interest in the Golden Eagles. The two young ones are now flying well, and it is a fine sight to see all four eagles flying around the rock.

We have a problem on our hands: rabbits are multiplying rapidly (I believe this is characteristic of rabbits) and our boundaries now contain great numbers of them. Nearby farmers are greatly worried, for our rabbits are growing educated. They wait until our neighbors have their backs turned, then jump through the fence, eat up an acre or two of growing beans and corn, and when the irate neighbors come running with shotguns, the rabbits jump back inside the fence. It is reported that once they have gained the safety of our boundaries, they make derisive gestures at the farmers who believe in respecting our regulations. Something will have to be done about it.

ROADS

On July 11 the custodian rubbed his eyes in amazement when he beheld FIVE road-scrappers moving along the road past the Rock. They returned a few days later, on their way back to Gallup. While the road will stand more improvement, it is now possible, for a time at least, to experience the novelty of having the car one is driving progress in a horizontal direction, whereas formerly most of the travel was made vertically. Now, if we can just have the road gravelled, so wet weather won't turn it into a bottomless morass and shaking quagmire, we can expect greatly increased visitor attendance.

GENERAL

Early in the month the custodian took a flying trip out to Chaco Canyon while his car was being given a periodic check-up. I went in company with Custodian McKinney, was guided about by Ranger Hastings, and greatly admired both their monument and the service they render visitors.

As I conclude this report, word reaches us of the passing-away of Mrs. McKinney. It comes as a great shock to both of us, as it will to all who knew her.

o

In the earlier days of El Morro, when E. Z. Vogt first developed that water supply we found out visitors objected to it, more or less, and that was one reason we ran that couple of hundred feet of pipe

EL MORRO (CONT.)

down the slope and put a faucet on it. The visitor, too lazy to walk up to the pool, got his water at the faucet and, there being a strainer on the outlet where the pipe left the reservoir, the water was very satisfactory. I think Jesse Nusbaum suggested that solution of the water problem, anyway it worked fairly well.

We have the El Morro water problem up near the head of our WPA requests and have urged the Washington Office to do all they can to get us enough to drill and equip a well. - F.P.

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GRAN QUIVIRA

By Geo. L. Boundey, Custodian

Visitors for July totaled 417, of which better than 95% were tourists. The month has been extremely hot with several good rains which have filled up all cisterns. The rains have saved the corn and bean crop, and the grass is better than it has been in some years.

Have taken up the matter of roads with Carrizozo and in dry weather they are directing cars over the short cut to the south. People coming from that direction report the roads as good desert roads and are enthusiastic over the mileage saved.

During the month we had a party of six from the Taylor Museum at Colorado Springs - Mr. and Mrs. Kubler, Mr. and Mrs. Wilder, a Mr. Kibbler and Miss Taylor. They took very careful measurements of the church and monastery and spent considerable time in looking over the ruins.

A party of seven from the State University at Albuquerque, among them Dr. Brand, spent some time at the monument on the 25th.

Since Carrizozo has begun to route cars in from the south, Corona residents are getting busy and improving their road in from the east. A little competition is the very life of trade in this section of the country.

The bird we were inquiring about some time ago is the same bird Betty Jackson inquires about in the last report. Our two pairs have raised their young and have gone to singing and instead of being ground dwellers they have graduated into tree birds and sing from the highest point they can find.

A dump truck and the hoisting apparatus for the deep well arrived during the month and we are now equipped to handle almost any emergency. The rains have filled the two cisterns and we should have enough drinking water for the next year or two.

The man who financed the last treasure hunter shaft dug on the

GRAN QUIVIRA (CONT.)

monument paid us a visit last week. He is a lawyer from Albuquerque. The man who had direct charge of the work died a few weeks ago.

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MONTEZUMA CASTLE

By Earl Jackson, Custodian.

STATISTICAL

Visitors: - - - - -	1,507; July, 1936, 1,482.
Arizona visitors by cars - - -	916; % of total 60.78.
California visitors by cars -	272
Texas visitors by cars - - -	61
Total states (incl. Wash. D.C.-	37
Foreign countries - - - - -	2

Conveyance:

Cars - - - - -	400
Arizona cars - - - - -	232

Contacts: - All visitors contacted.

Trips - - - - -	231
Attendance - - - - -	1,099
Those who climbed ladders - -	830 or 75.5%.
Average trip time - - - - -	33.37 minutes.
Museum lectures - - - - -	236
Attendance - - - - -	1,049
Average museum time - - - - -	16.07 minutes

WEATHER AND ROADS

Weather has been somewhat freakish. The July rains started early, on June 29, and it rained on July 3, 4, 6, 7, 9. Since then there has been no rain. Total precipitation for the 30-day period was 2.2. Since you omitted my report of precipitation for June, it will be repeated here to keep the record straight. It was .12.

The past two weeks have produced excessively depressing weather, with high thermometer readings and much "sticky" weather, with a total of four cloudy days and 15 partly cloudy.

Approach roads into the valley were somewhat rough during the early days of the month, but are now in pretty fair shape. The entrance road to the monument is looking better than I have seen it this year, thanks to a highway department grader which went over it day before yesterday.

SPECIAL VISITORS

Park Service: None; guess it's too hot to travel.

MONTEZUMA CASTLE (CONT.)

Other Visitors

June 27 - Dr. H. W. James, president of State Teachers' College at Silver City, New Mexico, was in with 21 teachers and students.

June 29 - Jim Walkup, secretary of the Flagstaff Chamber of Commerce, was in for a short visit.

July 3 - Dr. and Mrs. A. E. Douglas, accompanied by Mr. Thomas Hale, an archeological friend of mine, were interested visitors. Dr. Douglas needs no introduction.

July 8 - Thomas R. Burnett, of Mission, Texas, a lieutenant-colonel in the U. S. A. R. was an interested visitor.

Comments

While visitor travel seems about normal at the Castle, people of central Arizona, and especially in Prescott, are bemoaning the fact that Boulder Dam is drawing away a great deal of summer tourist trade. With the new road completed into Mead Lake it seems that coast-bound visitors go straight west from Flagstaff, instead of dropping south from that point and going through the Verde Valley and Prescott to the Wickenburg and Phoenix roads.

Our peak day of tourist travel at the Castle was 187 visitors, on the Fourth. That crowd was harder to handle than most. While the ranger and the custodian were very busy doing their stuff, our friend the vandal (drat his hide) took advantage of the opportunity to write his name in three places in one room of the Castle. This matter has already been taken up with you by letter.

Yesterday a young man who had lost both his legs climbed up all four ladders to the Castle and went all through it, doing the climbing in quicker time than most normal individuals.

A party of Pima Indians, William Nelson and family, were very interested visitors. They are from near Coolidge, now living in Phoenix, and Nelson can remember Mr. Pinkley 25 years when he still owned the Four Mile Trading Post near Sacaton.

PERSONNEL

Roy Young, who served as temporary guide after Ranger Farmer resigned, was released from duty on July 19, his 30 days of per diem employment being finished. It was expected that Mr. Jennings, the new ranger slated for this post, would be here by the 21st, but he has not arrived yet.

MONTEZUMA CASTLE (CONT.)

NATURE NOTES

On the 25th of June two coyotes were heard yapping a short distance up the creek. Coyotes seem more numerous in this region than for many years. On July 9 raccoon tracks were seen a short distance down the creek.

A six-inch centipede, caught while roaming familiarly about a bedroom here, now reposes in alcohol in the museum, and attracts considerable interest.

Recently we saw something interesting in the creek which I'll bet most of you never heard of. It was a swarm of very tiny catfish, less than a half-inch long, occupying a space about as big as the opening of a small skillet, and guarding the swarm was a mature catfish, whether male or female we couldn't tell. This sight is often seen along the creek, but that was the first time this year.

Thanks to Roy Young and his knowledge of botany, we have some new tentative plant identifications. We are pretty sure of these, but would not swear to them on a stack of bibles yet.

"Dove Weed."	Croton texensis
"Silver Leaf Nightshade"	Solanum eleagnifolium
"Aster"	Aster Andersonii
"Rocky Mountain Bee Plant"	Cleome lutea

One of the most dastardly of tricks we have seen in a long time was pulled off by two young men here on July 6. After seeing the Castle and the museum they were at the parking area preparing to leave when they espied one of the tame rabbits. They immediately set upon it with rocks, stoning it to death. When I accosted them they were executing an imitation of a Comanche victory dance and uttering war whoops. Their matter has been taken up with your office by letter.

For birds at Montezuma Castle see Betty Jackson's report in the Supplement.

o

Earl speaks incidentally of something that is bothering us in several places; the time it takes to get appointments through. I know, of course, something of the hectic conditions back there with all the thousands of appointments going through, but it is very hard on the field man. One of our men goes out of the Service. We pick up a local man on a field agreement and rush the papers through for a new man. We have to drop the temporary man before the papers on the new man come through and there is no other local man available. It is hard on the quality of the service we can give. - F.P.

*****OOO*****

NATURAL BRIDGES

By Zeke Johnson, Custodian

I told you in last month's report that I needed rain, of course, mostly to kill the gnats. Well, I have had rain and the little flyers are all gone. July has been a very pleasant month out here - very many fine showers and, of course, lots of good water after I got it carried up the hill.

There have been 146 visitors and not one that was not contacted. I have made the nine-mile hike ten times and the 13-mile hike twice. I have taken 84 visitors into the new ruins. 29 people made the nine mile hike alone and 11 made the 13 mile hike alone, leaving 24 that went only to the first bridge. 62 males and 23 females took a plunge into my dandy bathing pool. I spent 410 minutes talking to those people with whom I did not hike, and, of course, I talked all day to those I hiked with, so I don't know how much time I should have for that. I do know, however, that I have had plenty of exercise this month, and I am very glad, for I love to hike with the class of people that come to see the Bridges since they all seem to have a little pioneer blood in their veins and can see beauty in every crack and ledge. They are also very enthusiastic over the country and its many beauty spots.

The roads and trails never were as good before. Although the road in some places is very crooked with many narrow grades or dugways, there has never been an accident, or not one has ever failed to get through O.K.

I was very happy to have the privilege of hiking with Hugh M. Miller, Charlie Steen, J. H. Tovrea from Coolidge, Charles Richey from Santa Fe, and A. C. Kuehl from Grand Canyon. These gentlemen dropped in on an inspection trip about the middle of the month. They seemed to enjoy the trip; I am very sure I did, and I wish I could have kept them longer, as there were many beauty spots they could not see in so short a time, but maybe they will come again. I hope so. I was also pleased to have a visit with James W. Brewer, the roving ranger. He will come again and bring Sallie with him.

A few days ago while in Blanding after my mail I sent a Mr. Peterson, his wife, and two small children out to the Bridges and told them I would follow up as soon as the mail came in at 2:00 p.m. When I arrived at my camp I found Mr. Peterson at camp weeping with his two small children. I inquired as to what the matter was, and he just could not talk for a moment or two. Finally he said "I have lost my wife." Then he told me he had sent her off alone to see the Augusta Bridge while he took care of the kiddies.

At 5:00 p.m. Junior, who was working trail, rode into camp and found Mr. Peterson very uneasy about his wife not returning, so Junior told him he would take care of the little ones while he went to meet his wife. After being gone about an hour he returned alone, having failed to find her, so off Junior went on his horse to try his luck. He had been gone

NATURAL BRIDGES (CONT.)

only a few minutes when Mrs. Johnson and I drove up, and after Mr. Peterson got control of himself he told me the story. Mrs. Johnson promptly suggested that she take care of the children while Mr. Peterson and I went out to look for Mrs. Peterson. So off we went with a bag of water and a flashlight apiece, and just before dark we found her. She got off the trail somehow and wandered southwest for several miles; then went east and crossed trail and wandered for about seven miles. She could not tell where she lost trail nor why, but Junior trailed her up and was almost caught up to her when I called and she answered. It was a very exciting experience for us, and we cannot tell why she left the trail. She had been gone about six hours and was about famished for water. She is the first to cause a man hunt at this monument, and I don't believe any voice ever sounded better to me than hers when I first heard it away in the distance. I hope I never have another experience like it.

The weather is all that could be asked for, and I am raring to go for the coming month.

o

We are glad Mrs. Peterson's experience resulted as happily as Zeke reports it, and one who knows the country will understand both Zeke and Junior did some plain and fancy trailing in the few hours they had between taking the trail and the coming of night. Of course, Zeke wouldn't mention that because reading desert records is part of his every day life, but we thank Heaven we had the right man in the right place that afternoon.

*****ooo*****

TUMACACORI

By Louis R. Caywood, Custodian

This is one month I thought I would not have to say anything about visitor travel showing an increase over the same month last year, but the increase has been so large that I just have to mention it. This year gives us a total of 1,157 visitors that were contacted or in some way used the monument facilities during the month of July, while last year only 818 visitors were reported. This increase amounts to 339 visitors or 41.4 percent over last July.

Will the same month in 1938 show a corresponding increase over this month's record? Part of this increase belongs to a normal trend which comes with a period of better employment, higher wages and the resumption of vacations by large corporations. With the added travel due to better conditions and improved roads comes the urge of many to see Mexico. People who normally visit only our northern areas now take a few additional days to run into Mexico while they are this close feeling that they may not visit the Southwest again. Naturally a visit to Mexico via Nogales means a visitor to Tumacacori.

TUMACACORI (CONT.)

Special visitors included the following:

July 4 - Mr. and Mrs. Lyle Bennett were here from Santa Fe. Mr. Bennett was especially interested in the proposed museum building.

July 5 - Luis Gastellum paid us a visit while in Tubac for a few days with his family.

July 9 - brought Fred Winn, Supervisor of the Coronado National Forest.

July 14 - Mr. and Mrs. Jack Diehl were here for a short visit. Of course, we were glad to see Jack, but we were very pleased to make the acquaintance of Mrs. Diehl and hope they will pay us a visit again before too long. Jack finally caught me at the monument and really working too. Jim Felton and myself were pouring the concrete base for the pump when they arrived.

An old friend of the Southwestern Monuments family, Dr. H. V. Halladay, was here on July 22.

On July 23 Kenneth B. Disher, associate museum expert of the Eastern Museum Division, Washington, D. C., was here. Mr. Disher arrived at 10:30 P.M., stayed at the monument that night, and went over a great many details with us the next day. This was his first visit to Tumacacori.

The weather during the month has been warm and sultry with many attempts at rain but little to speak of so far. For a few days in the latter part of June it seemed as though there would be plenty of rain this year, but since that time there have been only a few drops or very light showers which do not do any good as far as vegetation is concerned.

Because of the press of other work no bird banding has been done this month. Almost all of the birds are through nesting now and the young birds are making their appearance around the monument. A quail nest was noted near the canal, but some predator took all the eggs. There wasn't even so much as a piece of shell left. The predator could have been a local cat, a raccoon or a skunk. The same thing happened last year to the same pair of quail. However, a number of new quail families ranging from 2 to 14 chicks have been seen around the monument.

The most important events of the month were "cut over" days. On July 23 the electric system was cut over from the Westinghouse DC plant to regular AC current and on July 24 the old water system was cut over to the new pressure system. This means that we should have uninterrupted water and light service. The water system consists of two 525-gallon pressure tanks and a 72-foot well cased with 6" casing to a depth of 55 feet and cased with 4" perforated casing for the last 17 feet. The column pipe is 47 feet long and attached to the bottom is a 42" brass

TUMACACORI (CONT.)

double acting pump cylinder. To the bottom of the cylinder is 15 feet of sucker pipe. The pump is a 10" stroke Dayton operated by a $1\frac{1}{2}$ H.P. electric motor. The entire outfit is installed in a cement lined pit, according to your suggestion, Boss, and will eventually be the basement of the proposed work room of the museum building.

The Los Angeles Times - Gilmore scouting party recently motored into Mexico in a Chevrolet sedan. On their return Mr. Lynn J. Rogers stopped at the Mission to get information and to let the staff photographer take some pictures. On July 11, an article appeared in the Los Angeles Times which told of San Xavier, Tumacacori and other missions of this group. The article was illustrated with photographs and drawings.

o

We can all heave a big sigh of relief now that Louis has a permanent well of good water. We have been fussing with that water supply off and on for many years and now we can feel that our troubles are over so far as water is concerned.

I wonder what Padre Kino would have thought, in 1691, of an automatic water supply, light at the turn of a button, and an electric refrigerator? - F.P.

*****OOO*****

WALNUT CANYON

By Paul L. Beaubien, Jr. Park Archeologist

This month 1,904 visitors registered, and 1,344 were contacted. Some 50 or 60 others picnicked here after dark without registering. Rain is unusual early in July, but this month several rains cut heavily into our travel figures.

Park Service visitors included J. B. Hamilton, Dorothea J. Lewis, John Will Faris, Milton Wetherill and Erik Reed. I believe that Hugh Miller, J. H. Tovrea and Charlie Steen were here with a party while I was down on trail, but none registered.

John Will came while I was out, and was busy guiding visitors when I arrived. He seemed to think that de Chelly was a great place, but of course more visitors are enthusiastic about Walnut in a couple of days than will go see de Chelly in a month.

The other road sign was erected early in month. Both have been in place for some time, and I can positively state they are inadequate. I have had as many as five complaints in one day from parties that drove by the entrance roads and then had to return after inquiring their location from filling stations.

WALNUT CANYON (CONT.)

The county has scraped the roads several times, and they are in fine condition.

In the canyon there are several water holes remaining from the overflow of Lake Mary this spring. Evidently there was water available during the dry springs before the dam at Lake Mary was constructed.

A turkey with poults was seen near the Observation Point July 4. No other turkeys have been seen here during July for several years, due to lack of water. I believe it would be consistent with Park Service policy to plan some artificial means of watering game now that the normal supply has been altered.

Under some government relief set-up which I do not fully understand, some springs in Shultz Pass and on Eldon Mountain have been improved and the water piped to Black Bill Park, Doney Park, and to a stock tank within three miles of this monument. I believe that an investigation by the proper Park Service officials might result in the acquisition of a good water supply for Walnut.

I went to Sunset Crater and Wupatki July 23. 1,212 visitors had registered at Sunset, 104 at Wupatki, and 237 at Citadel.

o

Paul won't believe it but we had a visitor down at headquarters this month who said we could pull out of Walnut Canyon and fill it up as far as he was concerned. It developed, upon questioning, that he was there several years ago when there was no one to show him around or tell him anything so that the net result of the trip was pretty low. I tried to send him back and have Paul convert him but he was rushed for time and couldn't go back. It shows the value of a real guide who can explain things. - F.P.

*****oo*****

NAVAJO

By Milton Wetherill

Have come out of the poison ivy O.K., but that is all part of the game. Have been busy up here so can not take time to be on the sick list.

Went to Chin Lee on June 28 with Uncle John after Mr. and Mrs. Oenslager of New York. who were taking a trip to Rainbow Bridge. While at Chin Lee enjoyed a nice visit with J. W. Faris. On returning to Kayenta took party to Betatakin, Kit Siel and went on through to Navajo Mountain; from the mountain returned to Betatakin.

While on the mountain found that the tent caterpillars had killed about three acres of Aspens. They are bad this year; at the time I was

NAVAJO (CONT.)

up there the moths were in full flight. They were so thick that there seemed to be thousands of them.

Park visitors: Hugh Miller and party of four. They visited Betatakin and Kit Siel. Johnwill Faris and E. P. Meinecke were in for a visit to Betatakin.

Weather has been hot with several showers which have washed the roads in several places.

Trails: The trail from the end of road has washed some. The rest of the trail is in good shape. July 17 made pack trip to Kit Siel. The trail had to be worked in several places. I had an Indian with me.

o

Glad to hear Milton has recovered from his dose of poison ivy.

It seems good to be really planning a headquarters location for Navajo National Monument and we hope the construction money will be forthcoming in the next year. - F.P.

*****OOO*****

TONTO

By Irving McNeil, Jr., Temporary Park
Ranger.

Sale !!!

We are selling to the visitors an interest in this monument. The advertising campaign is conducted by uniform courtesy to all guests, and direct, thorough explanations to all questions possible. The prices we try to obtain are interested visitors, who leave the monument pleased, and with the essential facts.

At the bargain counter, we are selling death and destruction to all insects and reptiles found in the house. In return, as they are local residents, it is expected that we buy from them now and then. However, we have only been "stung" once. We have driven many a family from its home and forced it to the wall by our persistent salesmanship.

Here are a few among the many noted purchasers of our products: Edward McSherry, district passenger agent, Pacific Greyhound Lines at Phoenix, said a campaign was to be started to advertise the Apache Trail. Mrs. E. B. Sayles of Gila Pueblo. Reg Manning of the Arizona Republic; Earl Desmond, member of the California legislature; Rupert N. Richardson, vice-president of Hardin-Simmons University at Abilene, Texas.

TONTO (CONT.)

Park Service Visitors:

Luis Gastellum and Al Bicknell from headquarters.

Guaranteed Unfading Colors

Total visitors -----	399
Total guided trips -----	81
Total number attending trips -----	284
Total time on trips (minutes) -----	4,291
Average time on trips -----	52.9
Average attendance on trips -----	3.5
Total museum lectures -----	82
Total attendance museum lectures -----	313
Total time museum lectures (minutes) -----	960
Average time museum lecture -----	11.7
Average attendance museum lecture -----	3.8

Odd lots: We will have no more of this same number and 99 in the number of total visitors even if we have to count this ranger to make the extra hundred. Interesting visit from students of deaf school - one asked questions and interpreted to others. Dr. W. H. Reed, cousin of the late John D. Rockefeller, who is in his eighty-second year, went to the ruins and was the first one of the party down....Stepped through the floor of Room 6 on the ninth day of July....every type of transportation to the ruins and back has been suggested from burros to electric elevators and escalators.....With the parking area filled with cars, people ask: "Don't you get lonesome?"....A number of rains have washed the trail and road to some extent....One party camped for the night on the monument....Since the rains, everything looks bright and green....so fresh and green that even the visitors remark about it.

....Bill Duffen put some wire around the firepits to keep people from stepping in them. Somebody in every party wants to know why the Indians put the wire there.....Lots of honey bees in the cliff dwelling. Only one little girl stung so far.....Pleasant surprise in having Luis Gastellum and Al Bicknell on the 15th. They brought a much needed battery....Earliest visitors 6:55 A.M.; latest party, 8:15 P.M....Had a visit from George Henderson who had visited the ruins 50 years ago. Said the reason for the distruction was that it was burned to smoke out the bees to get the honey. He was not of the honey party - rather expensive honey.....Used to be jealous of Casa Grande's mosaic work, but find that we have Charlie's Slit Tapestry.....Appreciate the clean ruin that Tom has left me.....Have thoroughly enjoyed my first month with the Park Service.

o

You would think Mac was pretty well sold in this new monument of his,

wouldn't you? It may be the light air up there around the Roosevelt Lake for Charlie Steen, Tom Onstott, and several others have been just as enthusiastic about a period of service at that monument. - F.P.

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PIPE SPRING

By Leonard Heaton, Acting Custodian

I am afraid that this month's report will be rather short, as I have been at the monument only one week and there has not been much to report on in that time. I was in hopes that Clarence Thomas, the man I left in charge of the monument, would be here to make a report of what had been done while I was away. Since he left the camp and did not make a report I will have to let it go with just the travel record he kept.

There have been 185 visitors to the monument in July. Mr. Thomas conducted 28 parties, or 129 people, spending 355 minutes. Robert Nofsinger who was in charge when I got back home had 11 visitors to his credit, and 75 minutes spent with the visitors. I have had the balance of 45 visitors the past week.

The weather has been very hot the past week with only a few clouds yesterday. There had been some rain some two or three weeks ago that did help some, but we need another shower to help bring along the trees and plants. Some of the trees that were set out this year are drying and I can't seem to get the water to them often enough.

Al Kuchl has been in to visit the monument twice since my last report, once while I was away and again July 20, in company with Superintendent Tillotson of Grand Canyon, Chuck Richey, district landscape architect, and Ward, Carpenter, and Nelson of the BPR, going over the route for the new road from Fredonia by way of Pipe Spring to Toroweep. They stayed here only a few minutes, and I expected Al back here July 21, but he did not show up. I have several things that I want to discuss with him.

Our CCC projects are about all worked up that have been approved, and the truck that we were using broke down and there is no telling when we will get it again. Have had the boys do a lot of clean-up work this week. Will turn all but two or three boys back to the CCC unless Al gets in and we can figure out some work for them to do that can be accomplished without the use of a truck.

On July 20 my Grandmother, Mrs. Lucy E. Heaton, passed away, and services were held July 22 at Orderville, Utah. She came to this country when she was but a child in the middle 70's and has been a wonderful pioneer in the development of this region.

PIPE SPRING (CONT.)

The new office desk is great and I am well pleased with it. Thanks a lot for getting it for me.

While in Washington, D. C., I called on some of the Park Officials and enjoyed the visit with them very much. I only wish that I had more time to spend there and get better acquainted with them and the work that they are doing.

The Scout trip was well worth the time and effort it took. I wish that all organizations could conduct themselves as did the Scouts when they visit the National Capitol, and it would take a lot of worry off the minds of the President and his co-workers. I am sold completely to the Scout organization and believe it is one of the things that will keep us out of trouble with other nations if we can but get the scouting principles over to the boys and then have them live them.

This may sound like preaching but it is good stuff for anybody to take up with. So much for that.

Don't think of any more to write for this report, so will close.

o

It looks like Pipe Spring will be coming back into the spotlight again.

Several years ago it was a stopping point on the Zion-Grand Canyon road and was then a heavily visited monument. When the Zion-Mount Carmel road was put through the traffic at Pipe Spring fell to almost nothing. Now if the road from Fredonia to Lake Mead is built Pipe will again be on a through road and one which will have heavy travel. - F.P.

*****ooo*****

WHITE SANDS

By Tom Charles, Custodian

What has become of our school of technique in handling the crowd? Seems to me that I can pass the responsibility on most every problem but this one. If it is a wildlife problem I can pass it to Adrey Borell; if it is geological, I have a whole book on the geology of the Sands by Vincent Vandiver; if it is engineering, I'm not supposed to know it, and so on, but if the problem is one of personal contact it must be handled immediately. And this personal contact business is so sensitive, so exacting that even a word or a smile or the lack of it may be the difference between a successful contact and a bungled one.

The average tourist responds to a friendly contact but a touch too friendly is an unpardonable error. One group wants you to talk to them and the next crowd wants you to let them alone. One group is skeptical

(WHITE SANDS, CONT.)

and will argue with you at the slightest opportunity, you cannot put your story over strong enough for them, while the next will take the whole thing, hook and line and bobber, and there is danger of making the story too strong. Isn't there some rule, some line of approach which is safe and then a "closing" as the insurance men say?

On Saturday, July 3, the State Highway Department counted 1,677 cars at the south entrance to Alamogordo. On Sunday, the Fourth, there were 1,877; on Monday 2,123 and on Tuesday 1,322. It is safe to say that nearly half of these cars passed the Great White Sands or there was a car a minute for four days, 16 hours a day. Last Sunday, a week after the Fourth of July crowds were over, I counted 72 cars past the entrance to the Sands in 60 minutes. Thirty-six percent of these cars went into the Heart of the Sands. On the night of July 4, 53 cars drove into the picnic ground in a little over an hour. Most of these were loaded with children and fireworks. The children had prevailed on the parents to take them to the White Sands where they could enjoy the pyrotechnic display which has become an annual attraction.

On the evening of July 3 there were many parties at the Sands enjoying their display of skyrockets, Roman candles, spinners and fire crackers. There was one group of 36 boy scouts from the camp beyond Weed which is 70 miles from the Sands and their business was still good when I went to sleep in the next canyon about 10 o'clock. And at daylight the next morning cars began to roll in for "breakfast at the Sands."

So you can see, Boss, that there is plenty of contact. There are from 25 to 100 visitors at the Sands every day and from 100 to 500 there every Sunday, a continual case of contact - easy, to be sure - for the man who couldn't sell the White Sands couldn't sell new greenbacks. Still you often wonder if you had the best line of approach, if the "technique" was good, etc.; are there any rules to go by?

Friendly writers have been kind to us the past month. Alphia Hart, special writer and staff photographer of the Daily Oklahoman, of Oklahoma City, made us a special visit and on his return to work gave us nearly a full front page of half tones and a column and a half of reading matter. Mr. Hart was especially impressed with the Sands' cleanliness: "You are the very first visitor," said he, "there is not a trace of the thousands who have gone before." Carveth Wells, that famous author, explorer and lecturer who talks over the National hookup for the Conoco Company, gave us a nice story in the August Cosmopolitan: "Here you will view a dazzling sea of pure white crystals of alabaster, 30 miles long and nine miles wide - a fairy land not duplicated anywhere else in the world," says Mr. Wells. "In this astonishing region the animals are white, the lakes are red and you play golf with balls that are black." Last week, also, a tourist bureau, speaking from Des Moines, Iowa, gave the White Sands a real "spread", urging their listeners to come this way. While both daily papers in Albuquerque have asked for descriptive articles of the Sands

WHITE SANDS (CONT.)

for their Harvest Home editions coming out in the last of August.

John Veale, associate engineer of the Park Service, has taken Mr. Happer's place as project manager of the building program at the Sands. It is putting it mildly to say that John is busy; he is more than busy, but he is getting the job done.

According to the registration book we have had visitors from 41 states and eight foreign countries this month. There were 1,739 who voluntarily registered at the Turn-Around and on the basis of 14% registration it gives us 12,421 visitors this month.

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Tom, I wrote you what I thought about handling visitors, which in its last analysis is just to consider them as dumb as you and I, approach them with a smile, and after that be governed by circumstances.

The trouble was I mixed in a lot of other stuff that the copy reader won't let go through and now I am having to rewrite this, cutting out ninety percent of it and getting it down to the case cards, as it were, which I have put in that first sentence. These boys are right, of course, but I still think what I wrote the first time was pretty good and I will persuade Luis to make a fair copy of it and send one to you personally.F.P.

*****ooo*****

HOVENWEEP

By James W. Brewer, Jr.

This has been a full month of ups and downs with the bad mixed in with lots of good.

Two good rainstorms made roads very bad and one cloudburst took a road away.

On the bad side comes my visit to the Cajon group of Hovenweep National Monument (June 23). This group has been taken over for water development.

Like most of the ruins on this monument, the Cajon group is built on the cap stone ledge where a water course suddenly deepens. Known as Cool Spring House (Fewkes Bull. 70 BAE) it was once a fine ruin. Now, most of the Cavate ruins under the ledge (Morrison? sandstone) are removed and a revetment wall closes the whole recess except a couple of small rooms on the east. (One of these rooms has some petroglyphs and a painting, in white, is a Greek key-like design still well preserved. This has been photographed and the negative sent to your office).

The spring has been piped only about 50 feet and, after watering,

ROVING RANGER'S REPORT (CONT.)

the sheep climb all over the ruin. Prehistoric building stones taken from standing walls were used to construct revetment walls.

We camped at Hovenweep until the 26th, at which time it seemed advisable to make the Kayenta-Lukachukai inspection trip.

Leaving Hovenweep on the morning of the 26th, we took the dim trail across Montezuma creek to the Bluff-Landing road thence through Bluff to Comb ridge (see monthly report, June, 1937, page 392). At this critical point, (Navajo Pass) around which point there is no possible detour, we found the road washed out. Norman Novillis was there organizing a highway crew to make temporary repairs. Gullies three feet deep had washed both sides and the center of the road out.

We pitched in (Sallie cooked up some chow for the highway boys (11) and we all threw rocks into the washouts for four and a half hours). After a thrilling descent (no brakes, no compression) on almost no road, we reached the bottom of Navajo Hill (32% grade).

Comb wash was a sea of slick silt but we somehow slopped across it. Several culverts and road fills were washed out but we reached Mexican Hat at dark.

On the 27th we stopped at Gouldings where I was presented with a fine photograph of a nearby double arch which I have forwarded to your office (the photo).

On to Kayenta where I learned that the Monument Valley Expedition was going to cross from Mesa Verde to Hovenweep to Kayenta. I wanted to be at Hovenweep when this party passed through so I rode along with Field Director Dr. Winning to Mesa Verde, returning through Hovenweep on the 29th.

Leaving Kayenta in good old 8113 USDI I had carburetor trouble and decided to go to Flagstaff for repairs.

Six miles from Red Lake the big green job just quit altogether. You know the place, Boss, the deep sand-dunes where the sun comes down the short way and its a million miles to the nearest shade tree.

I cleaned the carburetor and fuel pump and line then assembled it already to take off - but no go. At this point, amid much language, Dr. Stitts, U.S.I.S., came along and gave me a lift to Tuba City where I got a mechanic to go back with me. He worked it over for about an hour and I drove it about one half mile when it gave up again. Nothing we did seemed to get it going so we towed it to Tuba City where a welding outfit and a half mile of friction tape enabled me to limp into Flagstaff.

ROVING RANGER REPORT (CONT.)

We returned via Chin Lee and the Lukachukais (Had a nice visit with Johnwill, Pete and Tom).

Arriving back at Cortez on the eighth we took off for Mesa Verde to get some ruins protection signs which, I believed, were being kept in storage there for us. Six miles from headquarters area the rear axle broke and we had to send in for a tow. The splendid cooperation we got at Mesa Verde comes distinctly in the "good" column. I think everybody on the staff helped in some way to make our wait for parts pleasant. Superintendent Nusbaum outlined the most expedient procedure for the repair parts and Mr. Boylan, mechanic, installed them on his Saturday off!

A heavy rain on the 11th washed a bridge out on the Yucca House alternate road and left a two-foot silt deposit blocking the short road.

Ranger Burgh and Nurse Jones of Mesa Verde were met on the 16th at Hovenweep. Ranger Burgh told me he had seen a CCC truck scouting the ruins for water development projects.

At the Ackmen spike camp, Division of Grazing, Engineer Connell informed me he had an approved project to develop the Hackberry spring for stock. This project has been suspended until it gets NPS approval. If this water could be piped off the monument (1/4 mile) it would help eliminate sheep camps on and near the ruins. As it is they camp close to the ruins spring in the winter. I have gone over the monument with Mr. Connell and pointed out the landmarks and the lands under reservation.

I found that all of our carved signs in storage at Mesa Verde are for Arches and I'll see that they are installed soon.

I hear that the San Francisco office has a supply of National Monument boundary signs and I'd sure like to have some. Also some Antiquities act posters.

o

Sure, I know the place in the deep sand dunes, Jimmie - last time I was stuck there was two years ago last April with Tom Vint and Hillory Tolson. For your information we found upon our return trip a mess of little roads working to the south of the main road by which you can avoid that sand patch.

Ask Boylan if he remembers that time we had that flat and, upon breaking a bran new inner tube out of the original package, we found a four inch bolt inside it. That at least added interest to the episode of the flat.

ROVING RANGERS REPORT (CONT.)

Thank Harry Goulding for that print next time you pass and give my regards to both Harry and Mrs. Goulding. Isn't that a wonderful front yard they have? About 2,500 square miles of it and it changes color every hour of the day!

Your story of the washout on the Comb Ridge road reminds me of the old days before it was filled up when a fellow from Ohio bouncing from rock to rock broke the side members of his Model T Ford when he was about half way down that hill. Being a Ford, he wired her together and was going strong when I met him a couple of days later between Red Lake and Rainbow Lodge on what was then another bad piece of road.F.P.

*****OOO*****

MOBILE UNIT

By Robert S. Harris, Engineer Foreman

I respectfully submit the following report on the Indian C.C.C. Mobile Unit for the month of July, 1937.

Enrollment of personnel for the group, and camp construction were started on July 7, 1937. To date 133 man-days have been expended excavating a water pipe line trench for the camp. This line will also make water available for the custodian.

A heavy rain which occurred July 11 did considerable damage to the bridge approaches and caused the cesspool for the custodian's residence to cave in. Sixteen man-days were expended repairing this damage.

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For many years Superintendent Pinkley has emphasized the crying need for a comprehensive, long-term program of ruins stabilization in the Southwestern Monuments, and this first report from the Mobile Unit marks initial fulfillment of his wishes.

Beginning in January, 1937, a series of arrangements culminated in the establishment late in June of a cooperative project between National Park Service CCC and Indian Service CCC, the former to furnish supervisory personnel, automotive equipment, and tools, the latter supplying enrollees, the camp, and subsistence. Personnel will consist of 25 enrollees, an engineering foreman, and an archeologist foreman.

The unit is mobile in the sense that it can be shifted from monument to monument as needs arise, but ordinarily it will stay at a monument during favorable weather conditions until pressing work is exhausted.

First project is Pueblo Bonito in Chaco Canyon---creating effective drainage, strengthening foundations, capping walls, and placing

CCC MOBILE UNIT (CONT.)

inconspicuous bracing where needed. If time permits, emergency stabilization may be effected on other Chaco ruins, but the unit will move at the break of winter weather---possibly to Wupatki, Tonto, or Montezuma Castle---and return to the north in the spring. Sufficient funds have been set up to carry the unit for one year, but expectations are that appropriations will be forthcoming for at least another year, and, we hope, indefinitely. Ten such crews could work in the monuments for two years without catching up the work now immediately necessary.

Full notes and photographic records will be kept of work accomplished and copies of reports will be filed with the monument, the Southwestern Monuments Loan Library, the Washington Office, the Bureau of American Ethnology, etc. Ground plans and profile drawings will be executed according to standards of the Historic American Buildings Survey. The crew will confine its activities entirely to stabilization and repair---no restoration is contemplated.

Various new methods will be tried out, particularly the use of Bitumuls Stabilizer in wall capping and pointing, and it is hoped the crew will perfect and standardize ruins stabilization techniques.

The unit at present is occupied in establishing camp and obtaining sufficient water supplies. It will limit its efforts to simpler drainage problems until the archeological foreman, now in process of selection, arrives to share the supervisory burden with Foreman Harris.

*****OOO*****

HEADQUARTERS STUFF

BRANCH OF EDUCATION

By Park Naturalist Dale S. King

Park Naturalist King was on office duty the entire period from June 24 to July 23. Major portion of his time was spent editing the June Monthly Report and assembling the Annual Report of the Southwestern Monuments. Other completed projects were the preparation of the following: Instructions and forms for archeological work of the ruins stabilization Mobile Unit; informational circulars concerning Organ Pipe Cactus National Monument; an informational circular on the subject of Gila Monsters for distribution by the Douglas, Arizona, Chamber of Commerce; reading of copy for new Southwestern Monuments folder being published by Washington Office; reading of mimeographed informational copy on all monuments, to be issued by Washington; checking of art work for above-mentioned folder.

Junior Archeologist Charlie R. Steen was on duty except for a period, July 20-25, on annual leave. In company with Assistant Superintendent

BRANCH OF EDUCATION (CONT.)

Miller, Engineer Tovrea, and Landscape Architects Richey and Kuehl, he traveled through our northern monuments from July 8 to 19. Navajo, Rainbow Bridge, Natural Bridges, Arches, and Walnut Canyon were visited and administrative and educational problems discussed. For the remainder of the month Steen aided with the June Monthly Report and Annual Report and spent some time arranging material in the Casa Grande museum. He made a short business trip to Tonto July 2 and 3.

REPORT OF THE HEADQUARTERS LIBRARY, By Gertrude F. Hill, Student Technician

From June 28 to July 28, 1937, work on the Headquarters Library progressed fairly rapidly. The major activity for the month was the cataloging of our sets of the Smithsonian Institution Annual Reports and the National Geographic Magazine, a project which involved typing subject (and in some cases, author) cards for the outstanding articles which might be of use in the work of the educational division. Complete files of the Southwestern Monuments Special Reports and Broadcast, and a partially complete run of the Monthly Reports were dug out from obscure corners, cataloged, and placed in the collection.

Growth of the library has necessitated a good deal of shifting and rearrangement of shelves. At present we have 11 cases of books completely cataloged, marked, and in use, with 12 additional shelves, all full, awaiting cataloging. A marked increase in the librarian's stenographic duties somewhat curtailed fond hopes of bettering the previous month's work record.

Summary of activities from June 28 to July 28, 1937

Books cataloged: 186

Catalog cards made:

Author: 261

Subject: 796

Title: 96

Joint author and cross reference: 48

Shelf list: 321

Total cards made in July: 1,522

Total cards since start of project: 3,102

Books repaired: 3

Letters written, stencils cut, sketches made, etc.: 49

Time expended:

Library activities: 185 hours, 55 minutes

Stenographic duties: 14 hours, 5 minutes.

HEADQUARTERS STUFF (CONT.)
VISITOR STATISTICS

By the Boss

Total Visitors

Our July visitors total of 34,717 is considerably larger than the 30,110 visitors of a year ago, but it will be seen, upon a little study, that the increase falls at Capulin where we render no service.

El Morro, Pipe Spring and Wupatki show decreases over a year ago and the others show some increase but, aside from Capulin, nothing unusual, and with the sharp increase at Capulin we had nothing to do.

Strange as it may seem to the average Park Service official who may read this report, this fact that we are having only a mild increase over last year is very satisfactory to us. We are yet so undermanned, underfinanced and underequipped at several places that we are anxious to catch up with the traffic we now have before we will be pleased to see the figures rise.

Visitor Contacts

For statistical purposes, in order to compare with service records in the parks, we count a double contact at various monuments where we take a visitor through a field trip and then through a museum trip. Even with this double count of certain visitors (some 5,000 vases) we made only 14,525 contacts with 34,717 visitors. This is only a 41% contact and is nothing to feel very proud about, especially seeing that last year in July with only 30,110 visitors we made 17,019 contacts - 56%. This will bear a little investigation.

White Sands reported 2,324 contacts last year and none at all this year on practically the same attendance. This is the major error in the table and does not mean that Tom talked to nobody about White Sands last month. That is unthinkable. It means he didn't keep a record.

Aztec seems to have made about the same percent of contacts this year as last and kept the average party seven minutes longer in the ruins and the same length of time (16 plus minutes) in the museum. The percentage of contact is 191 out of a possible 200, which is very good indeed.

Bandelier had about 500 more visitors but made no more contacts than last year. It ran a less number of parties, 191 to 220; to about the same number of visitors (1,258 to 1,278), but gave them a little longer service, an average trip of 88 minutes as against 69 minutes last year.

Casa Grande made a nice gain in number of visitors with a not so heavy percentage of contacts (154% this year; 191% last year). It ran 212 field trips this year against 232 last year but it gave each party nearly four minutes more service. In the museum it gave 166 trips as against 203 last year, averaging 20 minutes each this year as against

HEADQUARTERS, VISITOR CONTACTS (CONT.)

25 minutes each last year. The apparent explanation for the fall in museum time lies in the fact that the museum was being overhauled and was badly disarranged all month.

Chaco gained a little in visitors, lost in percentage of contacts; gave an additional seven minutes to each field party and took $1\frac{1}{2}$ minutes off each museum party.

Chiricahua had an increase in visitors, a decrease in percentage of contacts, gave one more guided trip but decreased the average time from 140 minutes to 107 minutes. It is noted that there is less than a 10% contact at Chiricahua and the Educational Division will be asked to study the problem and see if more service cannot be given.

El Morro has a light decrease in number of visitors, a 3% decrease in possible contacts and a large increase in time per party, from 56 to 92 minutes.

Gran Quivira shows an increase in number of visitors and a 16-minute increase in the average party time.

Montezuma Castle, holds the same number of visitors 1,507 as against 1,482, shows a less number of contacts, 2,148 as against 2,333 last year, a decrease in field trip time 31 minutes as against 44 last year and a decrease in museum trip time 16 minutes as against 22 last year.

Tonto had a good increase in visitors, from 289 last year to 399, an increase in percentage of contacts, 134% to 149%, a sharpe increase in field trip time, from 21 to 52 minutes, and a sharp decrease in museum trip time, from 21 to 11 minutes. This last is caused, we think, by a new man on the Tonto job who is eager and willing to give service but is not yet able to talk Southwestern archeology. Give Irv. time and he will raise that museum average.

Tumacacori had a sharp increase, from 818 to 1,157 visitors, but the visitor contact dropped from 92 to 76%. Field trip time dropped one minute.

Walnut Canyon had a drop in number of visitors and also dropped from 85% of contacts last year to 76% this year. The field trip time dropped from 22 to 17 minutes and museum time dropped from 28 to 18 minutes.

No one is more aware than I that these figures are not precise. My claim is that they do show trends, and it must be no accident that the six museums reporting each show a decrease in party time in the museum. Allowing for the factors which we can count out, such as a new man at Tonto and the upset condition of the museum at Casa Grande,

HEADQUARTERS, VISITOR STATISTICS (CONT.)

I am wondering if this shows a tendency on the part of the public to "speed up" and have less time to spend at the stops during the day. The argument against this theory would be that in several cases it will be noted that we have been able to raise the field trip time.

It has been argued that there is no point to increasing the museum trip time or the field trip time. I am far from trying to claim that the time spent in a museum is a positive gauge of the amount of good received by the visitor, but if you can arrange or disarrange your museum so that 5,000 visitors average five minutes more or five minutes less in your museum, I am of the opinion you are increasing or decreasing the total value of your museum to the public in an appreciable amount and that museum trip time and field trip time are thus factors in the measurement of services rendered if taken over a large enough number of individuals or of trips.

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FIELD TRIP

By Assistant Superintendent Hugh M. Miller.

Pursuant to your instructions I left Headquarters on July 8 en route to Navajo, Rainbow Bridge, Natural Bridges, Arches, and Hovenweep National Monuments on inspection trip. I was accompanied by Junior Park Archeologist Charlie R. Steen and joined at Cameron by Engineer J. H. Tovrea, District Architect Charles A. Richey, and Resident Architect Alfred C. Kuehl.

At Cameron the party met and had a short conference with Regional Engineer Diehl and District Engineer J. B. Hamilton who proceeded from Cameron to the north rim of Grand Canyon.

The party reached Betatakin Ruin in Navajo National Monument on the afternoon of July 9, completed inspection at that point and proceeded over very difficult roads to Kayenta for the night. On July 10 the party walked in to Kit Siel Ruin, a detached section of Navajo National Monument. Returned that night arriving at Shonto Trading Post for the night about 9:30 p.m.

On July 11 we proceeded from Shonto to Rainbow Lodge, arriving about 1:00 p.m. We could not get stock for the trip to Rainbow Bridge until the following morning. July 12 we made the 14-mile saddle trip to Rainbow Bridge, remaining overnight at the Bridge and returning on July 13. From Rainbow Lodge we reached Inscription House Lodge for the night of July 13.

On July 14 we made the hike into Inscription House Ruin, detached section of Navajo National Monument, and got out in time to reach Blanding, via Kayenta, for the night. On July 15 we made the 50-mile drive to Natural Bridges National Monument, walked the nine miles of trails between

HEADQUARTERS, FIELD TRIP (CONT.)

the three bridges and got back to Blanding for the night. July 16 we drove from Blanding to Moab, Utah, and remained in Moab for the remainder of the 16th, the 17th, and night of the 17th in connection with business at Arches National Monument.

On the morning of July 18 we left Moab about 8:00 a.m. for Cortez, Colorado, planning to visit Hovenweep National Monument that day and get into Gallup for the night. It was necessary, however, to have the automobile repaired and in view of the need to return to headquarters we were compelled to abandon the trip to Hovenweep. Arrived Gallup for the night about 7:30 p.m.

Return home was made from Gallup to Coolidge on July 19.

Individual reports on the various areas visited follow.

ARCHES

The night of July 15 was spent in Blanding, Utah, after return from Natural Bridges National Monument. The party arrived at Moab, Utah, about 9:30 a.m. July 16. We promptly met Mr. L. L. Taylor, editor of the Moab Times Independent, Dr. J. W. Williams, Mr. Mars Pope, Mr. Mitchell Melich, Mr. Harry Reed, and others. The remainder of the morning was spent with these gentlemen discussing general matters affecting the monument.

In the afternoon the party proceeded with Mr. Harry Reed and Dr. J. W. Williams to the Windows Section of the Monument. The low grade temporary road constructed as a result of local effort from U. S. Highway No. 450 to the Windows Section was passable and in fair condition. It affords a practical means of access to the Windows Section by automobile though neither in location nor construction should it be regarded as suitable for a permanent entrance road.

The Windows Section offers a profusion of fine natural arches and, pending the development of permanent roads, should be regarded as the objective of automobile tourists. Either saddle stock or long hikes are now necessary if other sections of the monument are to be visited.

Returning to Moab at about 6:30 p.m. the party had dinner and in the evening looked at motion pictures prepared by Mr. Harry Reed which were exhibited through the courtesy of the Moab Lions Club. The remainder of the evening was given over to further conference with members of the Lions Club Committee.

The following morning, in company with Mr. Reed and Dr. Williams, we drove up the Colorado River road a distance of approximately 20 miles. This narrow road up the floor of the Colorado River Canyon offers undoubted scenic attractions. In the afternoon, again with Mr. Reed and

HEADQUARTERS, FIELD TRIP (CONT.)

Dr. Williams, we drove to the point at which the presently proposed boundary extension abuts on U. S. Highway No. 450 from which it is now proposed to construct a permanent entrance road over the ridge into and through the Courthouse Towers area to the Windows Section; thence northward to the Devil's Garden Section; thence to the proposed Klondike Bluffs Section; thence loop and return. Return to Moab about 6:30 p.m.

The first matter for discussion was the proposed boundary extension. I am still of the opinion that the proposed extensions indicated on Map NM/ARC-4934 would serve all absolutely essential purposes. There is, however, no doubt that fine additional scenery, though not of closely related type, would be added if all of the lands south of the proposed boundaries as shown on Map NM/ARC-4934 to U. S. Highway 450 and the Colorado River, respectively, were added to the monument. This land is worthless, or practically so, for grazing purposes and if a stub road might be built off the entrance road providing a short river rim drive with possibly a parking area and lookout point on the high ground at the big bend of the river commanding a fine vista of river and cliff, the added land would give added enjoyment to the public.

I am well pleased with the proposal to take the entrance road off U. S. Highway 450 at a point where it coincides with the boundary thence up a natural shelf along the canyon wall; thence into and through the Courthouse Towers area to the Windows Section; thence to the Devil's Garden; thence to the Klondike Bluffs area; thence return by short loop to the entrance road. In view of the relative inaccessibility of Rainbow Bridge National Monument and Natural Bridges National Monument, and the stated policy of holding these areas as authentic undeveloped back country, I feel that the Arches National Monument is the logical unit for construction of an entrance road which will give automobile tourists easy access to a group of natural arches. Arches National Monument would thus, presumably, serve that predominantly large section of the public which is willing to give neither the time, money, nor effort necessary to ride or hike into Rainbow Bridge or the Natural Bridges. I feel that the entrance road should approach to within not more than half a mile from interesting formations in the Windows and the Devil's Garden Sections from which some at least of the arches would be visible and could be reached over relatively short foot trails.

With this thought in mind I would suggest for consideration the development of small elastic parking areas at advantageous points along the road near the Windows and the Devil's Garden sections with construction of fairly high standard, easily negotiable foot trails to at least some of the important formations in each section.

The party discussed only very tentatively the location of a headquarters area. It would seem logical to set the headquarters down at a point near the junction of the proposed entrance road with U. S. Highway No. 450. From a control standpoint, such location would seem to be

HEADQUARTERS, FIELD TRIP (CONT.)

logical. If, however, the old tentative plan to develop a headquarters site near the old Turnbow Cabin is abandoned the question of water supply must receive primary consideration.

NATURAL BRIDGES

As stated in my report on Inscription House section of Navajo National Monument, the party proceeded on July 12 from Rainbow Lodge to Inscription House Lodge, making inspection of Inscription House on July 14. Leaving Inscription House Lodge, the party started at Blanding, Utah, about 9:00 p.m. on the night of July 14. Early on the morning of July 14 the party, with Zeke Johnson, Custodian, left Blanding on the 50 mile automobile trip to Natural Bridges National Monument. The complete trail trip was made on foot from the Johnson camp to Edwin Bridge, then to Caroline Bridge, thence to Augusta Bridge, thence to Edwin Bridge and return to the Johnson camp, a distance of nine miles.

The question of trail development was discussed on the trip. The nine miles of trails at Natural Bridges have been developed and constructed largely by Zeke Johnson, first as a private venture and in later years in connection with his work as part-time custodian. Very little actual money has been expended on these trails, and Mr. Johnson is to be complimented on the location and development of a picturesque, inconspicuous, and essentially adequate trail system at small expense. The trail crosses the creek beds at many points and over certain sections drift sand is objectionable. It was the feeling of the party, however, that since any ordinary trails constructed through these sandy areas would be destroyed after every heavy rain, it would be preferable to make no attempt to improve and stabilize them since the only effective stabilizing methods which could be employed would result in prohibitive expense and would unavoidably introduce an objectionable artificial appearance into what is now delightfully primitive scenery. It was the conclusion of the party that the annual trail maintenance allotment, now seriously deficient, should be increased to perhaps \$600 and that, aside from increased annual maintenance, nothing need be done about the trail system at Natural Bridges.

The location of a headquarters site was discussed. It was generally agreed that the least objectionable headquarters site would be at some point near the present Johnson camp. Ample room will be available for expansion, should expansion be forced upon us by the development of through roads near the monument.

In considering location of the headquarters site the question of water supply must receive consideration. Mr. Johnson suggested the possibility of developing a catchment area on the slick rock. This appears to be a simple and entirely feasible solution of the water problem. There is an area of slick rock above the camp site which could be protected without objectionable mar on scenic appearance and

HEADQUARTERS, FIELD TRIP (CONT.)

at very small expense. The run-off from this slick rock area could be stored in a concrete reservoir of adequate capacity situated at a point which would permit gravity delivery to the headquarters area. Study of this proposal is recommended for preparation of estimates and inclusion in the development program.

For future consideration, it is recorded that there are two good perpetual springs, each at a distance of approximately seven miles from the headquarters area from which it would be entirely feasible to pipe water by gravity to the monument. Both springs are now on lands owned by the government. Expense would, of course, be considerably greater than development of the catchment described above. It is conceivable, however, that future travel to this monument may, whether we wish it or not, increase to the point where the catchment plan would not provide sufficient water. Piping water from one of these good springs to the monument would present a permanent and fully satisfactory solution of the water problem. As you know the problem of obtaining water at Natural Bridges is now one of our greatest difficulties. The custodian has been bringing drinking water in with him from a spring about ten miles by road. The only other water available is rain water which accumulates in potholes in the bottom of the canyon. Immediately after rains this water is muddy. By the time it has cleared up it is full of wigglers, stagnant and unsafe for human consumption. We need a house badly at Natural Bridges but I should say that the need for an adequate water supply is even more acute and I would recommend adequate engineering study, firm estimates, and inclusion of the item with high priority on the development plan for the Southwestern Monuments as a whole.

I should like to express my appreciation of the cordial reception and fine courtesy which Mr. Johnson extended to all members of the party.

NAVAJO

After conference with Regional Engineer John H. Diehl and District Engineer J. B. Hamilton at Cameron, the inspection party proceeded through Tuba City to Betatakin Ruin, Navajo National Monument. The party left Cameron about ten o'clock in the morning and arrived at the head of the trail at Betatakin about 3:00 p.m. over difficult roads.

Betatakin Section

The entrance trail from the end of the road at Betatakin to the ruin constructed under CWA in 1933-34 had suffered severely from recent heavy rains..

The essential discussion centered around location of a headquarters area necessary to spot a building site for a residence for the permanent employee authorized under the 1938 appropriation. The inspection party were in agreement that it would be a mistake to establish even a small

HEADQUARTERS, FIELD TRIP (CONT.)

headquarters development on the floor of the canyon and unanimously agreed that it would be preferable to locate the employee's residence and the equipment shed at some point near the end of the existing truck trail and the head of the horse trail into the canyon. In later conversation with Mr. John Wetherill he agreed that such location would be desirable. The exact location at the head of the trail will necessarily receive further consideration before final decision. At any point now apparently available space will be limited but adequate if travel remains small.

Determination of the headquarters site at the head of the trail complicates the water problem. Present reliance for water is on the spring near Betatakin. Engineer Tovrea expressed an opinion that no serious engineering difficulties would be encountered in pumping this water up to a headquarters development on the rim. It was tentatively suggested that the problem might be solved by developing a concrete storage tank practically underground on the floor of the canyon to which the water from the spring would be delivered by gravity flow at a point not within sight of the ruins. At this point it would be necessary to install a gasoline pump to transfer the water from the storage tank on the floor of the canyon to the rim. It was tentatively agreed that it would be possible to pump this water to a second storage reservoir at a point on the rim high enough to permit gravity delivery with sufficient pressure head to operate necessary valves, faucets, etc., in the development at the head of the trail. No firm estimate of the length of pipe line required could be made but the line probably would not exceed 2,000 feet in length.

Two methods were proposed for consideration. One was to bring the pipe line to the rim through a shaft drilled vertically from above, thus concealing all evidence of the existence of the line. The other was to run the line up an existing fault or crack in which it could be concealed without excessive expense. Both suggestions should be regarded as highly tentative and subject to modification after exhaustive engineering study. Mr. John Wetherill offered as an alternate proposal the possibility of drilling a deep well. He believes that an adequate supply of water might be secured by drilling a well 700 to 800 feet on the mesa. Objection appears to be that such a well would probably cost as much as a plan whereby the water from the spring would be utilized. There would appear to be a chance that the well might be drilled and fail to produce water while it is certain that the water from the spring near the ruin, while not a copious source, could be relied upon. Flow from the spring was roughly estimated at from 60 to 90 gallons an hour, a yield which would be adequate unless travel to the area should become much heavier than is now contemplated.

Should funds become available for construction of an employee's residence before funds become available for development of a water system, it was proposed to construct a cistern to collect run-off waters from

HEADQUARTERS, FIELD TRIP (CONT.)

the roof of the dwelling. Such an arrangement could probably be relied upon to store sufficient water for the use of one family and would be justified as a temporary expedient though it would represent neither a satisfactory nor a permanent solution of the water problem.

It appears logical to place the headquarters development for Navajo National Monument at the head of the Betatakin trail as this location would give control of both the Betatakin and Kit Siel sections. It will be recalled, however, that the land at the head of the trail is a part of the Indian Reservation and is not included in the monument. It is assumed that arrangement could be made through the Indian Service to permit development at that point.

Kit Siel

The trip to Kit Siel was made on July 10. No stock was available and the party walked in from the end of the road, a distance of eight miles and return, total 16 miles. Kit Siel Ruin was found in an excellent state of preservation without evidence of vandalism. It is well protected by its isolation and should never be made easily accessible to the casual visitor. It is, however, regarded as extremely unfortunate that the Park Service does not control at least a stretch up Kit Siel Creek from Betatakin connecting Betatakin and Kit Siel. No developments are recommended at Kit Siel. It was the feeling of all members of the party that it should be held in its present primitive state. It was felt, however, that some improvement work should be done on certain difficult sections of the existing trail, which is in no sense a constructed trail, being little more than a route over which it is possible to reach Kit Siel. Such development cannot apparently be done legally since practically all of the trail lies outside the two small areas surrounding Kit Siel and Betatakin ruins. It is felt that consideration should be given to the possibility of extending the boundaries by at least a narrow strip between Betatakin and Kit Siel to protect the approach to Kit Siel and to legalize a minimum of work on the connecting trail.

Inscription House Section

Inscription House was visited on July 13 after return from the trip to Rainbow Bridge National Monument. The night of the 12th was spent at Inscription House Lodge operated by the Richards family and the trip to the Inscription House Section of the monument was made on the morning of the 13th. A poorly defined desert road reaches from Inscription House Lodge and Trading Post to a point approximately $2\frac{1}{2}$ miles from the Inscription House section of Navajo National Monument. No evidences of recent vandalism were observed except for the damage done to prehistoric timbers in 1933, which has been previously reported upon by other persons in considerable detail. Existing trail to Inscription House is fairly good standard, showing evidences of construction. It does not lie within the boundaries of the Inscription House Section of Navajo National Monument and I am unable to report who was responsible for its construction. Possibly the Indian Service, as

HEADQUARTERS, FIELD TRIP (CONT.)

there was evidence that the trail is now in use by the Navajo Indians who live in the canyon. The canyon appears to be fairly populous and several cultivated Indian farms were observed along the floor of the canyon. There is a considerable acreage of bottom grazing land and cultivated farm land directly in the foreground of the ruin.

No developments of any nature are recommended. It is felt that Inscription House enjoys a reasonable degree of protection by its isolation. White visitors certainly are not numerous. Recommended that the permanent employee to be stationed at Betatakin should make a monthly inspection trip to Inscription House and that possibly at some future date arrangements be made to place a temporary ranger near the site during the summer travel months. In the meantime reasonable protection may be given simply by inspection trips at monthly but somewhat irregular and unannounced intervals.

RAINBOW BRIDGE

The inspection party spent the night of July 10 at the Shonto Trading Post. Proceeded by automobile to Rainbow Lodge over poorly developed roads, arriving at Rainbow Lodge about 1:00 p.m. July 11. Since the Lodge has no telephone it was impossible to make advance arrangements for stock. Mrs. Wilson informed us that it would take two hours to get stock up and that it would then be too late to attempt the trip to the Bridge, a distance of 14 miles by saddle animal over difficult mountain trails. Since it was Sunday, the party took the remainder of the afternoon for a much needed rest. Actual pack trip to the Bridge began on the morning of July 12. The pack in requires seven hours. The Rainbow Bridge was inspected late that afternoon and early the following morning. Return to Rainbow Lodge was made on July 12.

The 14 miles of trail from the Lodge to the Bridge are entirely outside the boundaries of Rainbow Bridge National Monument, an area of only 160 acres. Considerable construction has been done on this trail, originally, it is understood, with funds provided by Mr. Hubert Richardson, who owns the Rainbow Lodge. Some later work, we were informed, was performed by the Indian Service. There are several sections of the trail on which reconstruction work and possibly relocation to reduce grades should be performed. One of these is the section which makes a big drop into Cliff Canyon. Another is the Red Bud section of the trail. Large portions of the trail, while they are in no sense to be compared with developed trails in the National Parks are picturesque and adequate and in the opinion of the inspection party would require little attention. It was felt, however, that the item carried in the Six-Year Program for trail development might well be spent on the single section of trail which drops from the rim into Cliff Canyon. A similar sum could be spent with great advantage and no detriment to the remarkably primeval scenery in the

HEADQUARTERS, FIELD TRIP (CONT.)

Red Bud section.

With the exception of acutely needed improvement on certain sections of the approach trail, no modern developments are recommended. It was felt by all members of the party that the Rainbow Bridge National Monument and approach should remain undeveloped for the satisfaction of that small but important section of the traveling public to whom a pack trip into authentic back country in which primeval scenery is unmarred by the hand of civilization gives a thrill and satisfaction which would be lost upon the introduction of houses and sanitary facilities.

I should say that the most emphatic impression which I received from the trip to Rainbow Bridge was that the area of the monument is disappointingly inadequate. The word inadequate is too weak to convey the almost tragic deficiency. Practically all of the 14 miles of approach trail traverses an area of superb scenery which is surely of national park caliber. I feel very strongly that the Service should not rest until the magnificent approach scenery is included within the boundaries of the monument.

C

CLOSING

By the Boss

Our growth has been so slow and steady that we hardly realize there is any until something happens to awaken us to the progress we have made.

About a month ago one of our men wrote a spoofing letter to headquarters, which, being misinterpreted, raised trouble and called for a letter from the Boss setting things straight again. Mine wasn't much of a letter, just a sort of gentle admonition such as I have received now and again from you and from Horace before you, but it brought out a dandy response which explains the field man's position so clearly I want to quote some of it here:

"I realize that your criticism is utterly just and correct. My letters have frequently been too rambling and verbose, and I appreciate the fact that for efficiency all official letters should be simple and direct. I can assure you that in the future they will be that way, and will lack questionable humor. I also appreciate the fact that you are applying the same advice as regards sarcastic humor in relation to the public. Lord! I didn't know my humor was so awful! Do all humorists have to have their ears set down?

"If I am the only custodian who attempts crude humor or inclusion of too informal jots in his letters, what follows

will have no meaning, but if other field men have some of the same tendencies, I think I know what causes it. Out in the field we get lonely as hell at times. When the day's work is done, and we are through contacting the ninety percent of slightly interested visitors and the ten percent of really interested ones, we feel the need to jaw a little with others of our kind. It is a universal need of humans to consort with others who have similar work, face the same problems, and are somewhat closely associated in their jobs. We need those contacts so that our little egos can flatter themselves a bit by generously listening to others expound their pet ideas and can swell a bit by expounding brilliant ideas of their own. Each man wants to strut a little and if he isn't around others who do the same kind of work and face the same problems, he finds it difficult.

"So, in these remote field stations, when a man can't see his associates he likes to strut a little on paper, that being the only way to show his stuff to his fellows. It was an urge like that which got me into all this trouble."

Now I was on a lone post for some 16 or 18 years in the earlier days and I know what this man is talking about. You do get lonely for folks of your kind with whom you can talk sense and nonsense and have both understood and appreciated. I also know how you get blue and discouraged and think the central office has intentionally forgotten you and is giving every one else the gravy and you get nothing but the bones. This tends toward despair and general criticism of the whole outfit. I know about these mistakes because I made them all, and many more, years ago, and am not yet free from such feelings at times. The only amusing thing about this is that each lone post man thinks he is the first and only man to go through this experience. I can remember years ago how surprised I was when it first dawned on me that nearly every lone post man had to go through it.

This all sifts down to the fact that we are operating an area of over a thousand square miles having about 300,000 visitors this year with an operating force of forty-odd folks, and all this constitutes a real big-park operation, but, due to our peculiar condition of having this thousand square miles scattered over 26 different spots in four states, our personnel and many of our other problems are not big-park ones but are still pioneering problems, which is lucky for us because we have had quite a bit of experience along that line.

The answer to all this, it seems to me, Chief, will be to run the aggregation of units as a big-park outfit around the headquarters with its couple of hundred pieces of in-and-out mail per working day and its other office work in proportion, but among ourselves to never forget for a moment that "Out in the field they get lonely as hell at times." In

CLOSING (CONT.)

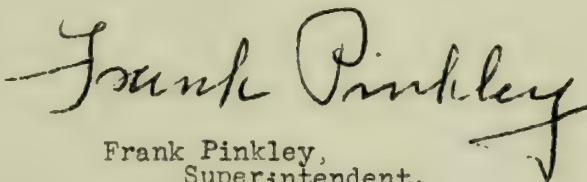
other words we are likely to remain in a pioneering stage.

This explains why we asked and received permission several years ago to work out our monthly report on our own lines and it is here we are trying to bring these lone post men together where they can meet upon the level and "Strut a little on paper."

Personally we wouldn't run a big park on a bit unless you ordered us to do so, but if you put our outfit over in a big park we will bet it would be easy to run it as compared with herding these 26 Southwestern Monuments through their various growing pains.

But it is a lot of fun!

Cordially,

A handwritten signature in cursive script that reads "Frank Pinkley". The signature is written in dark ink and is positioned above the typed name and title.

Frank Pinkley,
Superintendent.

THE Supplement

S-M MONTHLY REPORT

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TONTO RUINS STABILIZATION

MAY 27 TO JUNE 30, 1937

By William A. Duffen

Work began May 27 and continued until June 30.

The working crew consisted of the writer, who was in charge, two laborers and two burros, the latter being used for transportation of water and adobe from the ranger cabin up to the ruin.

This period of work was wholly upon the lower group, which was really in a bad state of repair, and consisted of the rebuilding of retaining walls, and cleaning of rooms which had been dug out at earlier times. In many cases the debris had just been milled over in the quest for "antiques". The slowest part of the job was the rebuilding of the rear wall of Room 2 (Stoner's map. See Southwestern Monuments Monthly Report for April, 1936, page 305).

The first unit of work accomplished was that of rebuilding the retaining wall in front of the cave, and the continuation of the same across in as near level manner as possible until it reached the remnant of the south wall of Room 1. This latter chore also added much strength to the front wall of Room 2. The dry masonry retaining walls now in place, we had a place to put the debris from the rooms.

The second work unit was removal of the aforementioned accumulation of trash in excavated rooms. All rooms of the ruin had been gutted before the ruin was put under protection of the National Park Service with the exception of Room 16 which we left undisturbed. Removal of this debris brought to light features that had not been reported to date as well as some very interesting artifacts. Room features will be included in the section of the report on room descriptions; artifacts were entered in the catalog of Tonto National Monument museum and will be described in a future Southwestern Monuments report.

In some cases only a couple of inches of dust would be found on the floor and in several cases as much as two feet of trash was removed. Even though the rooms had previously been "gutted" great care was taken by the writer in the removal of this material and as a consequence the artifacts were removed in good shape. In most cases the floors which have been left as such are in reality false floors which are the result of careless housekeeping by the ancient dwellers. The firepits will however in all cases be filled in save one which is in Room 15. This room will not be entered by visitors. However, its features may be observed from Room 16. This is a safety measure as well as one of exhibition, in that the room may be seen in its original floored condition with fire-pit, metate, etc.

The third work unit was the removal of the old ramp that used to lead from the cave floor to Room 7. Its removal allowed much more space and was in reality unnecessary in the exhibition of the site. The slats of a cradle were uncovered at the base of this ramp.

The fourth chore was to get good adobe for the reconstruction of a wall of Room 2. It was necessary to go as far as Windy Point, several miles from the ruin, to obtain this material. The adobe then had to be handled a second time. The transportation of same from the parking lot to the ruin was a slow tedious one. The beasts of burden would balk when one pound too much was hoisted upon their lazy little backs. The trip up was then very slow, as only a burro can make it. Five-gallon oil cans were used as containers for getting water to the site. All materials now being in place, the last task was ready to begin.

This consisted of cutting down to bed rock and obtaining a good foundation on which was laid dry masonry on which to build the wall. The steps built by the Southern Pacific Railroad Company leading to the little court, or Room 11, were moved to the spot where the door once penetrated this room.

It was found necessary to build up the wall in courses not much over a foot in height and let this set before the next layer was put on. The wall was constructed a trifle higher than beam height and then stepped off gradually down to about a foot high, the stepping commencing just beyond the beam axis. The large beam that had for years lain in Room 10 was replaced for exhibition purposes as well as to strengthen the newly built wall and to support the roof timbers which had for so long projected into Room 10. They form the roof for Room 9, or hallway, and part of the roof of Room 10. This part of the work really added much to the appearance of the ruin. It was the writer's wish to clean up and strengthen so far as such work would stabilize the ruin and yet not polish it up to the extent of looking too new or artificial. He hopes that it will be satisfactory.

The construction of several steps of stone and adobe in several of the rooms was deemed necessary to preserve walls that must be stepped over by visitors.

The final bit of work was the policing up of the area traversed by the burros and the return of tools borrowed to complete the work.

The cooperation of local people and the Forest Service, who lent equipment, is to be highly commended.

LOWER RUIN: ROOM DESCRIPTION

(Note: Room numbers taken from Victor R. Stonor, "A Reconnaissance of Tonto," Southwestern Monuments Monthly Report, April, 1936, opp. p. 306)

Room 1

Only a bare remnant of this room remains today, and none of the floor level. The room had without doubt been built on the edge of the cave floor and partially on fill. When depredations were begun at this site it is possible that this was one of the first rooms to go.

Room 2

In its original state this room was in all probability two rooms. A map of the lower ruin taken in 1920 shows the complete back wall standing, being pierced with a doorway at the point where the steps now lead visitors into a small open court. (Room 11). There were no floor features remaining. Room 2 was two stories in height, a fact substantiated by remnants of walls still erect at the south end.

Room 3

Practically nothing remains of this feature. A rock which anciently had fallen from the roof of the cave had formed part of the back wall to this room. The crevice between the floor and stone was walled up with adobe masonry. There had been a door connecting this room and Room 4, but it has been destroyed. On top of the stone remains a bit of cross-wall. The dimensions are indeterminable as practically all of this room has sloughed over the cliff edge.

At the edge of the large rock is a small firepit made of small stone slabs set upright.

Room 4

This room in its complete state was 19 feet long by an unknown width. Only a small amount of floor remains and that is in the southwest corner.

A small firepit, circular in form and clay lined, having a diameter of 10 inches and a depth of 6 inches is located 19 inches from the back wall and 12 inches from the south wall.

Due to the height of the door leading to Room 7 it was necessary for the dwellers to place a stone in front of it as a step. This feature remains.

TONTO RUINS STABILIZATION (CONT.)

Room 5

Stoner's map errs in regards this room. The south wall should be shown to continue completely across shutting Room 6 off from Room 5. The east wall does not continue across in front of Room 5 but terminates as the corner of Room 6. There is nothing to show that this room ever had a front wall. It is sure that Room 5 was used as there is much smoke on the roof and walls. The roof was formed by the cave top itself and the south wall continued up to it. The floor consists of a natural ledge. This room was roughly 6 by 11 feet.

Room 6

This room belongs to the early period of occupation and was never more than one story in height. The south wall is 8 feet, 3 inches long. The north: 10 feet; the west, 12 feet; and the east, 10 feet, 7 inches.

A circular clay-lined firepit 20 inches in diameter by 8 inches in depth is situated 3 feet, 10 inches from the east wall and 3 feet 5 inches from the north wall.

There is a possibility that a door led into Room 16 but as no lintel marks remain we cannot be certain.

Room 7

Room 7 shows all evidence of having been two stories in height. Dimensions are: north wall, 10 feet 11 inches; south wall, 10 feet 2 inches; east wall, 12 feet 11 inches; west wall, 12 feet

This room had three exits: in the east, west, and south walls. In order to enter Room 15 it was necessary to make a step up of two feet.

A circular clay-lined firepit was situated two feet from the east wall and five feet 4 inches from the south wall. This feature was 10 inches in diameter by five inches deep.

The ceiling in this room had been about seven feet high. It is an interesting point to note that the ceilings were all of a good height in this ruin.

A fine example of a wooden lintel remains in the west wall. It is 15 inches wide by two and one-half inches thick by four feet three inches long. This door is two feet wide by two feet five inches high and 17 inches above the floor of Room 15.

TONTO RUINS STABILIZATION (CONT.)

Room 8

A large part of the east wall of this room is made up of a large stone from the roof.

Room 8 measures along the east wall 12 feet 11 inches and along the west wall 11 feet one inch. The south wall is 10 feet four inches and the north wall 10 feet five inches.

This was a two story room. A door pierces the south wall entering into the hall which is of an undetermined width, while the height is two feet four inches. A blocked doorway exists between this room and Room 14. This was brought about probably by the addition of Room 8.

Room 9

This hallway is probably the dividing line between the old and the newer construction units. As it exists now it measures 23 feet 10 inches along the north wall, 18 feet 10 inches on the south wall, with an average width of three feet four inches.

The roof also forms part of the roof of Room 10. Apparently Room 9 was never more than a single story.

Room 10.

This room was very badly damaged and was the focus of a goodly part of the stabilization work carried on. Walls that were standing gave a width of 11 feet five inches along the back wall while the north wall measures 18 feet five inches. A beam which had for a long time lain on the floor of this room was replaced in the ceiling, and some of the walls were repaired.

A circular clay-lined firepit is located a couple of feet in from the north doorway.

Several fine artifacts came from this room.

Room 11

The feature designated as such is a small alcove or patio and probably was not used as a room. There is an outdoor firepit without much form against the west wall. The floor is formed by the bare rock of the cave floor.

Room 12

Room 12 on Stoner's map appears not to have been a room. The remnants of walls which exist probably were of a defensive nature.

TONTON RUINS STABILIZATION (CONT.)

Room 13

This was a small room formed by building a wall across a natural recess in the cave wall. The great amount of smoke on the ceiling labels it a living room. Had it been a storage room and had it been destroyed by fire there would have been burnt deposits on the floor. They were missing. The debris was dust and decayed organic material.

No clay-lined firepit was present but there is a small depression in the rock floor that gave up some wood ashes.

This room contains a very interesting type of door.

Room 14

This room is the most complete in the entire ruin, having the roof intact.

The north wall measures 12 feet seven inches; the south, 11 feet seven inches; and the east wall is 15 feet three inches. The west wall is 13 feet three inches long.

This room was one story high and was one of the first to be built in the cave.

The hatchway leading to the roof is 17 inches wide by two feet nine inches long. The roof is six feet seven inches above the floor, which is a generous height for cliff dwelling rooms.

A doorway on the south side of the room measures 28 inches wide by three feet high, and exhibits a four-pole lintel.

On close examination it will be noted that the crotch in the center post has been padded with grass. Could it have been done to prevent the creaking of the timber as it lay in it?

Room 15

Room 15 produced some of the good artifacts which were obtained. This room had been burned out and there was a goodly amount of trash in the back mixed with pack rat nests, composed largely of cholla cactus. This room, along with Room 14, is the oldest in the ruin. The floor is largely the natural floor of the cave.

A firepit 12 inches in diameter by six inches deep is located three feet seven inches from the north wall and six feet two inches from the east one.

This room was one story, and the roof was six feet eight inches above

TONTU RUINS STABILIZATION (CONT.)

the floor. Dimensions of walls: east, 11 feet 10 inches; west, 12 feet seven inches; north, 12 feet three inches; south, 12 feet six inches.

Room 16

Was this a room or an open court? The writer does not see how it could have been roofed over. There is a hole which might have well been one to hold a support post, but, the diameter of the post which this hole could have taken could not have supported the great weight that would have been produced by two beams at right angles. This hole is found on the rock ledge in the floor.

Room 16 is unexcavated, and should at some later date give some good information. Then, perhaps, the former existence of a roof can be proved or disproved.

The rough measurements on this room are: 15 feet nine inches north and south by 21 feet eight inches east and west.

00

HYPOTHETICAL RECONSTRUCTION OF BUILDING PERIODS

This reconstruction is based largely upon evidence presented by wall joints, blocked doorways, etc.

It appears that the first unit was composed of Rooms 14, 15, and 16. Later Room 6 was added and automatically brought Alcove 5 into being. At a later time Rooms 7 and 8 were added and two doorways that had been in the original part were blocked. Rooms 7 and 8 were two story affairs. A parapet was added to Room 15 where it overlooks Room 16. Rooms 14 and 15 appear never to have been more than one story in height. Room 16 appears never to have been roofed, but this fact will not be known until it is excavated.

Following the building of Rooms 7 and 8, the hallway or Room 9 was brought into being as were Rooms 10 to 13, inclusive. From all appearances Room 10 was a single story. The north wall of the hallway shows that it is a later addition in that the cross beams for the ceiling were set into holes which had been pecked into the wall. The roof of the hall extended on over and formed the north half of the Room 10 roof.

Room 11 was no room but an alcove having an outdoor fireplace.

TONTO RUINS STABILIZATION (CONT.)

It does not seem logical that such a room as Number 12 could have ever existed. The wall remnants might have been no more than a defensive measure, and it would help keep the aboriginal kiddies who might have played in the alcove out of the canyon below.

Room 13 has much smoke blackening on the roof which would seem to set it off as having been living quarters in place of a storage room. Just when this was built is unknown. It could have been constructed at any time without altering the setup in any way.

Evidence of Room 1 is nil. No statement is safe.

Room 2 had been two stories high as is shown by a picture taken in 1920. The major part of this room has gone over the edge.

*****OO*****

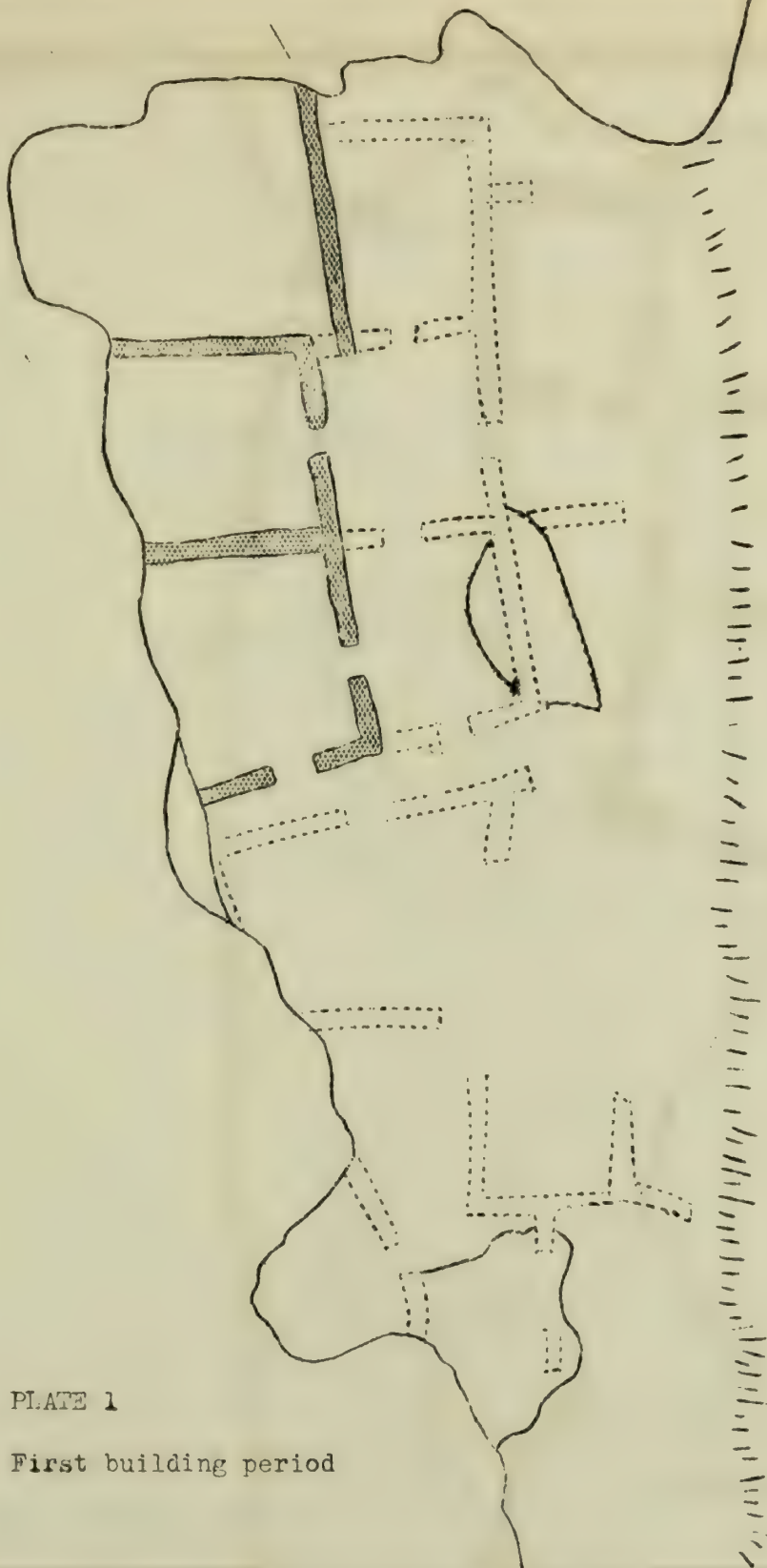


PLATE 1

First building period

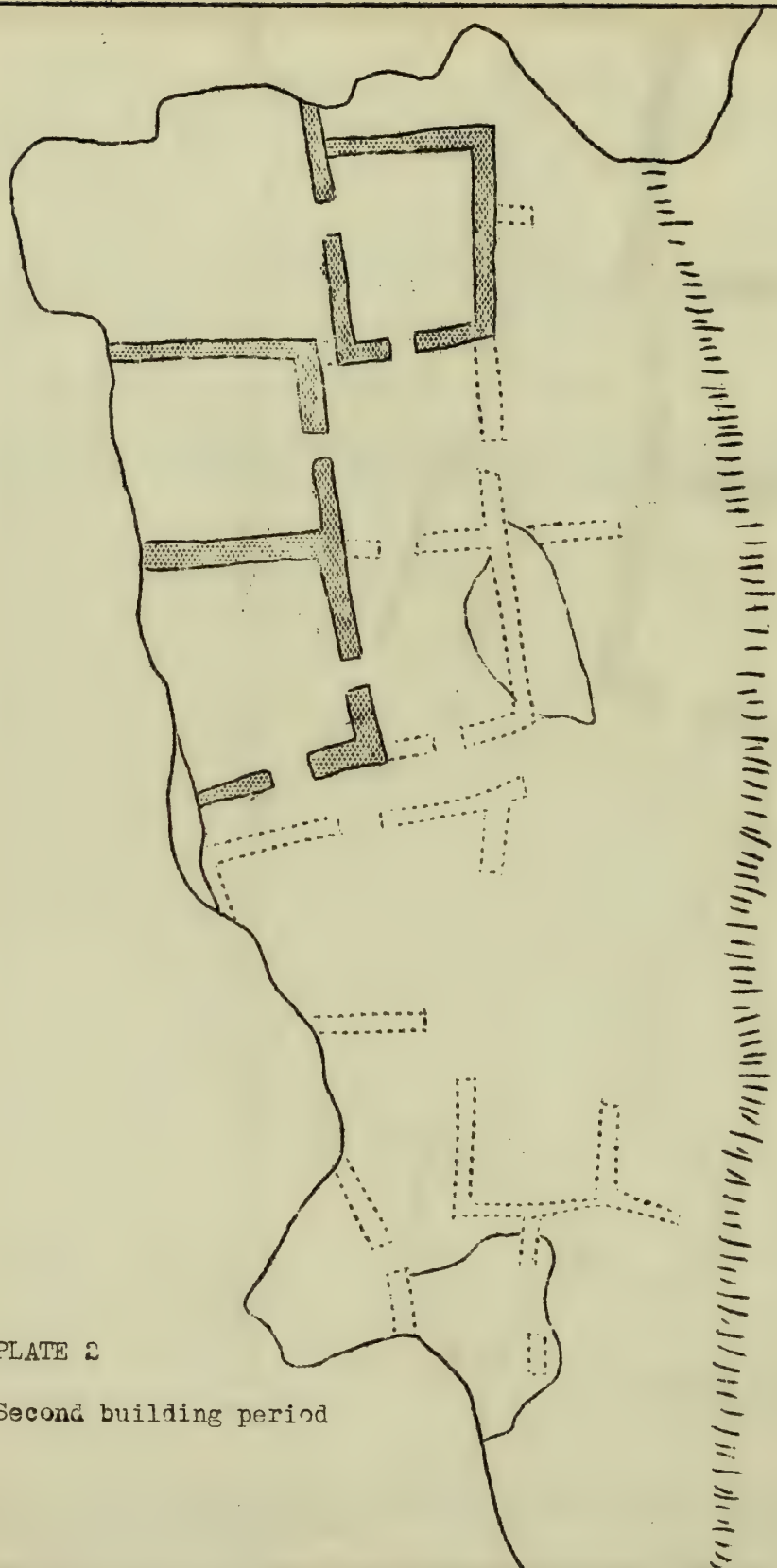


PLATE 2

Second building period

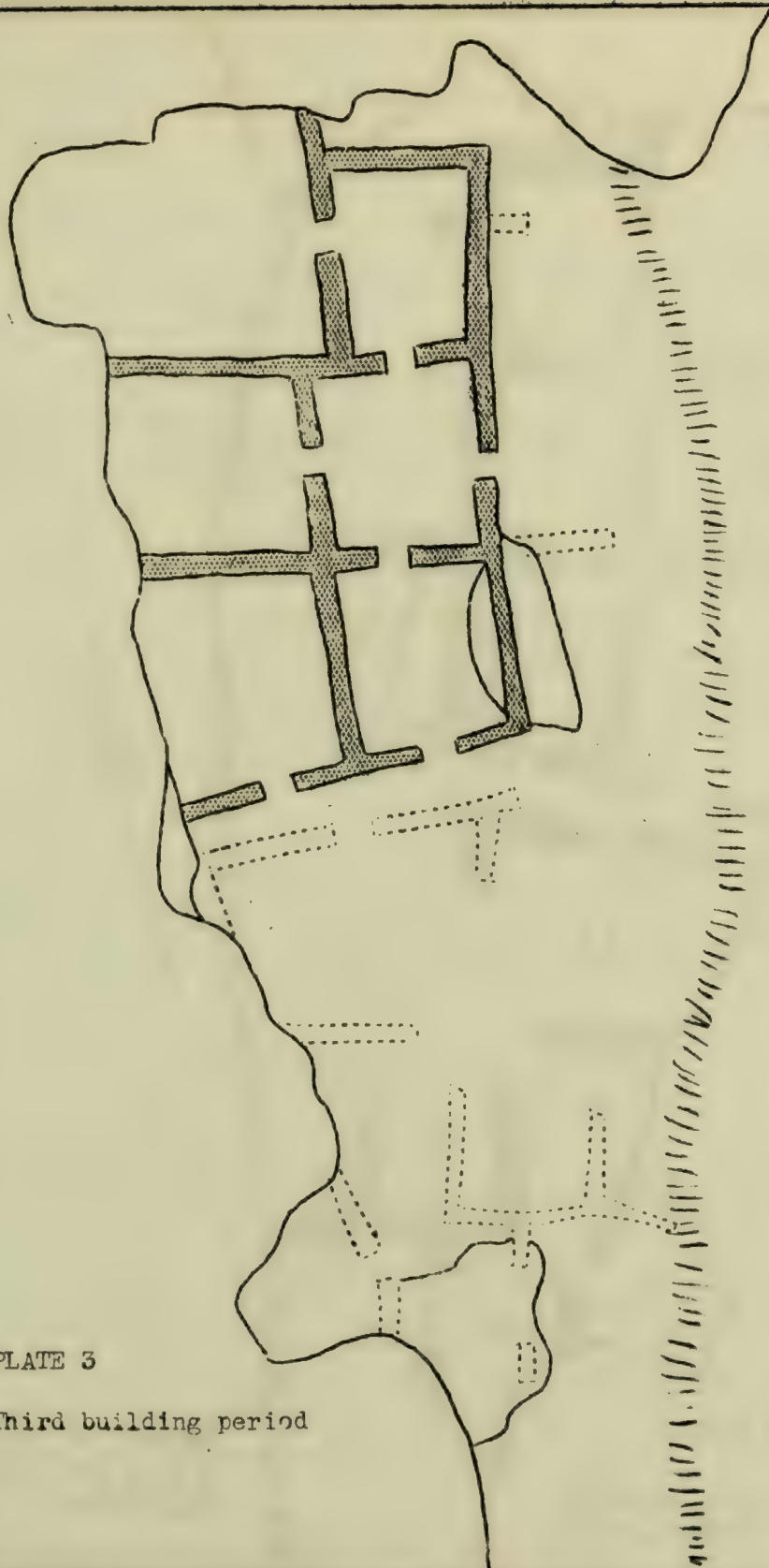


PLATE 3

Third building period

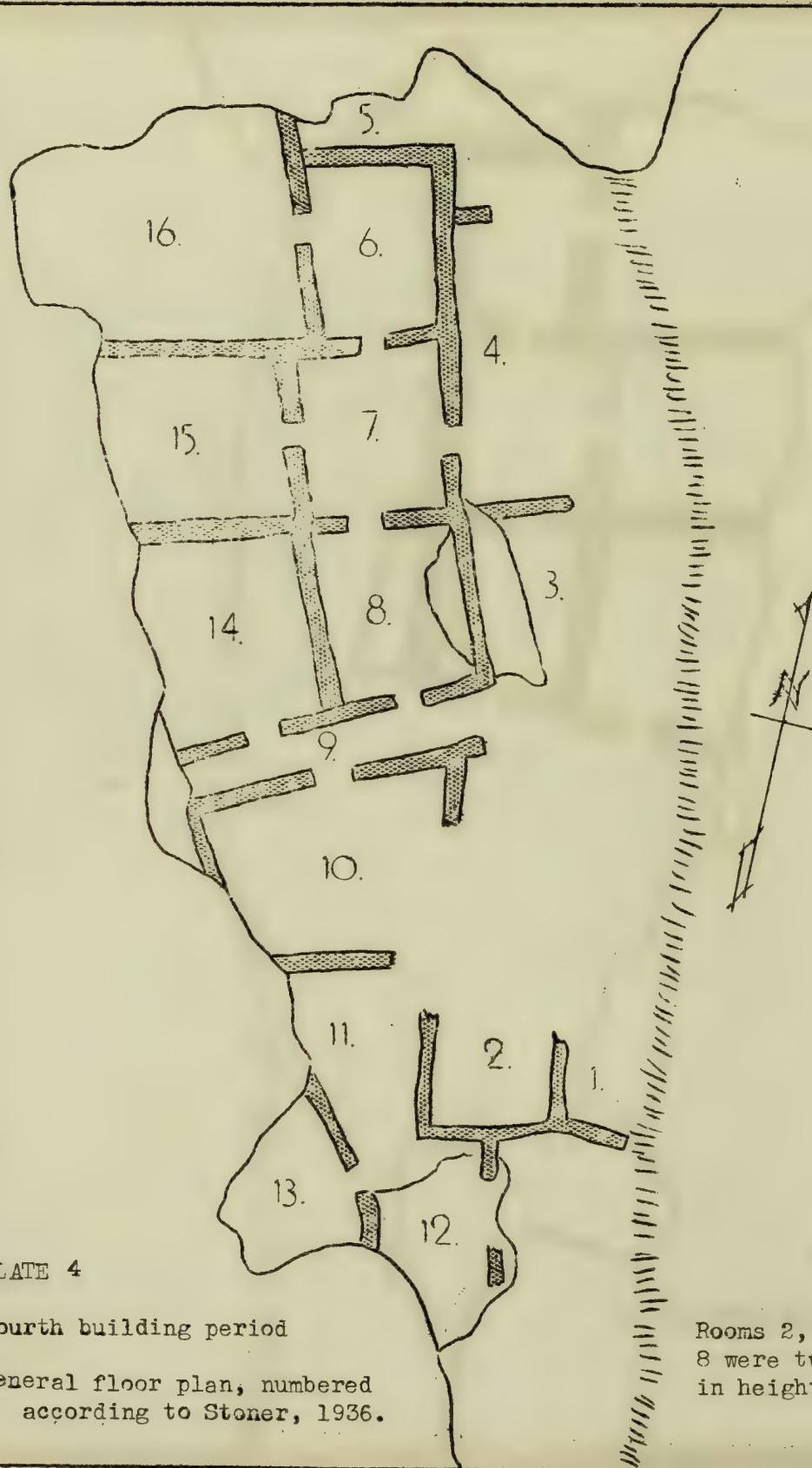


PLATE 4

Fourth building period

General floor plan, numbered
according to Stoner, 1936.

Rooms 2, 7, and
8 were two stories
in height.

GEOLOGIC REPORT, CANYON DE CHELLY

By Vincent W. Vandiver, Associate Regional Geologist

INTRODUCTION AND LOCATION

This report is intended to supply the main geologic facts regarding one of the most important Monuments of the Southwestern group, Canyon de Chelly, pronounced "shay". The Monument is situated in northeastern Arizona, near the center of the large Navajo Reservation, and consists of approximately 83,840 acres. It was established by Presidential Proclamation on February 14, 1931, and the description of the lands was amended by a Second Proclamation on March 3, 1933. The latter Proclamation defines the boundaries as follows:

"All land in Del Muerto, de Chelly, and Monument Canyons, and the canyons tributary thereto, and the lands within one-half mile of the rims of the said canyons, situated in unsurveyed Townships 4 and 5 North, Range 7 West; Townships 4, 5 and 6 North, Range 8 West; Townships 4 and 5 North, Range 9 West; and in surveyed Townships 4 and 5 North, Range 6 West; Townships 3, 6, and 7 North, Range 7 West; Township 6 North, Range 9 West; and Township 5 North, Range 10 West; all of the Navajo meridian in Arizona."

Existing approach roads to Canyon de Chelly are as follows: (1) Gallup to Chinle via St. Michaels and Ganado: 101 miles. (2) - Gallup to Canyon de Chelly via Ft. Defiance: 76 miles. (3) - Winslow via Hopi Indian Villages to Canyon de Chelly: approximately 128 miles. (4) - Shiprock to Chinle, via Redrock, Lukachukai, and Greasewood: 70 miles. (5) - Kayenta to Chinle via Rough Rock: 80 miles.

The settlement of Chinle, near the mouth of Canyon de Chelly, was so named by the Navajos meaning "a place where water flows out of a canyon." Here the Custodian has a splendid Pueblo style residence with a more or less separate office to contact visitors. There is a large Indian Day School in the village and two trading posts. One of the trading posts has been operated for years by Cozy McSparron and is known as the Thunderbird Dude Ranch. In certain seasons arrangements may be made at this ranch to secure cars for trips into the canyons and horses may likewise be procured during most of the year. Visitors at the Monument during the year ending September, 1936, numbered 1,091.

Much of the enchantment of the area lies in the primitive and picturesque background. In order to properly assimilate this setting it is preferable to spend several days at the Monument, to view the canyons from the rim, and then to take trips along the floor of the canyons and observe the towering cliff buttes, obelisks, pinnacles, not to mention the numerous arches and alcoves where the ruins of many Pueblo settlements

CANYON DE CHELLY GEOLOGICAL REPORT (CONT.)

are located. Many Navajos are living in the canyons at the present time. The Monument therefore offers to the visitor the rather unique experience of observing the ruins of the Pueblos and at the same time seeing the modern Navajo in his daily routine. It is with due regard to this glorious natural background, as well as the wishes of the present inhabitants of the canyons, that the Park Service has always endeavored to keep this area as nearly as possible in its original primitive state. Only the very limited and absolutely necessary development is contemplated.

HISTORY

Records remain of the cliff-dwelling habitation of the canyons by the Basket Makers and later by the Pueblos. The most important ruins are the White House, which has been dated by the tree ring method at 1050-1300 A.D., Antelope House and Mummy Cave at 1200-1300 A.D. Archeological expeditions were made by the Mindeleff's in 1894 (8) and by Earl Morris of the American Museum of Natural History in 1923 (9).

According to Colton (5), Canyon de Chelly was first explored by Americans in 1849, when it was found not to be the impregnable Navajo stronghold that had been reported. He further states that "By 1858 the Navajos had occupied Arizona east of the Hopi country, but had progressed very little farther. By 1863, because the U. S. troops had been withdrawn on account of the Civil War, the depredations of the Navajos had become serious. In that year a special expedition under Col. Kit Carson was sent against them. He rounded them up in Canyon de Chelly, captured about 8000 from all over the whole reservation and deported them to a reservation called Bosque Redondo near Fort Sumner in New Mexico. They were not all captured and the bands scattered. Some took refuge in the maze of canyons in the Rainbow Plateau and others invaded the Coconino Basin near the Grand Canyon. In 1868 the 8000 were returned from Bosque Redondo to their old desert home. Here they increased rapidly until their great reservation is now overpopulated. Spreading north of the Utah line and west to the Little Colorado River, the Navajos, estimated at 50,000 souls, occupy the largest Indian Reservation in the United States - a great area of 25,000 square miles. On the vast plains and juniper-covered mesas they tend their flocks of sheep and goats. They may be truly called "The Arabs of the American Desert."

At present there are from 350 to 400 Navajos living along the 60 miles of canyon floors within the Monument. Water may be secured from pit holes in the sandy flood plain at depths of 3 to 4 feet. The higher portions of this plain are utilized for their homes ("hogans") built of earth and logs, and adjacent plots of land are being farmed in much the same way as they were centuries ago.

GEOGRAPHY

CANYON DE CHELLY GEOLOGICAL REPORT (CONT.)

Land Forms

Canyon de Chelly lies in the south-central portion of the Colorado Plateau Province. The rocks of this section of the province are in the main horizontal or gently folded, in some instances they are sharply folded and faulted. Vegetation is scant and streams have cut deeply into the surface with the controlling factors generally conforming to the attitude or structure of the beds and to the relative resistance of the various strata. The soft shale members form broad valleys and slopes, with the hard sandstone layers forming steep walled canyons and cap rocks of the many escarpments or mesas. These briefly mentioned land forms are in evidence at Chinle, where to the west may be observed the enormous Black Mesa, containing some 2,400 square miles, capped largely by competent Upper Cretaceous sandstones; also in this same direction the broad Chinle valley composed of soft shales or "marls"; and to the east the west flank of the Defiance uplift where streams have been given added gradient to carve deep canyons in resistant strata.

Drainage

Canyon del Muerto drainage has its headwaters in Spruce Brook, to the northeast in the Lukachukai Mountains, and Canyon de Chelly in the Cushman Mountains proper to the eastward. Both canyons drain into Chinle creek and the waters ultimately reach the master stream of the province, the Colorado River, through the tributary San Juan. South of the Monument, drainage from the west flank of the Defiance uplift, reaches the Colorado River via the Little Colorado. Streams in the general area are mainly intermittent though some in their lower drainage and near their sources, at higher elevations, are perennial. The stream occupying Canyon de Chelly flows for a distance of some 15 miles as a permanent stream. The large valley of Chinle creek, of which de Chelly and del Muerto are tributaries, drains an area of approximately 4,800 square miles.

Climate

Topography is the prime factor as regards to climate in the Navajo country. The cliff-dwellers were aware of this fact and gave consideration of this feature in the establishment of their settlements along the canyon walls. Rainfall averages approximately 10 inches per year at Canyon de Chelly with around two-fifths of the precipitation generally falling in July, August, and September. Temperatures of -24° have been recorded at Ft. Defiance and highs of over 100° are not uncommon during the summer months. The prevailing winds are from the southwest.

Dr. Gregory (1) expresses these points regarding Navajo climate, - "The keynote of the climate of the Navajo country is variability, marked by sudden changes in temperature and wide fluctuation in rainfall. An intensely hot summer day may be followed by a chilly night; sunlight is

CANYON DE CHELLY GEOLOGICAL REPORT (CONT.)

synonymous with heat, shade with cold. The high temperature of the forenoon may be lowered by a cold rain or by a hailstorm, only to become re-established within an hour. When storms come the country is flooded; at other times the task of finding water for man or beast taxes the skill of the most experienced explorer.

GEOLOGY

General

Only sedimentary rocks are exposed at the surface on the Monument. The geology of the area is shown on the attached sketch map. It will be recalled that the boundaries define lands within one-half mile of the rims of Canyon de Chelly, del Muerto and Monument canyon as well as their tributaries.

It is known from the records of wells drilled along the Defiance uplift that there is a granite ridge which forms the core of this structural feature. The granite occurs at relatively shallow depths, around 600 feet at Nazlini canyon, 18 miles southeast of Chinle. This pre-Cambrian ridge was probably an old land mass throughout most of the Paleozoic, until the Permian, when it was buried by the Supai red beds. Overlying the Supai formation is the de Chelly sandstone, most recently considered to have been deposited at the same time interval as the Coconino sandstone to the west and southwest, but the material as will be explained later was probably derived from different sources. Both the de Chelly sandstone and the Coconino sandstone are now generally recognized to be mainly dunes deposited by the winds, or principally eolian in origin. Triassic and Jurassic formations have in turn been deposited over the de Chelly sandstones and we have every reason to believe from regional criteria that Cretaceous sediments once covered the area of the Monument to depths of several thousands of feet, however, these strata have since been removed by erosion.

Stratigraphy

The stratigraphy of the general area is shown on the table, page 59 following. Brief description of the various formations are listed on this table which includes the oldest rocks known up to and including those most recently deposited.

Interesting features in the stratigraphy of the Defiance uplift are the absence of the Kaibab limestone (Permian) and the thinning out of the Moenkopi formation (Triassic) in the central portion along the east flank. The Kaibab limestone, which caps large areas west and south of Black Mesa, and likewise forms the rim rock at Grand Canyon, thins out in the vicinity of Holbrook and is absent on the uplift, where in the southern portion the Moenkopi formation rests directly on de Chelly sandstone. The Moenkopi in turn thins out not far north of Ft. Defiance,

GENERALIZED STRATIGRAPHIC TABLE

ERA	PERIOD	FORMATION	THICKNESS (FEET)	LITHOLOGY
PALEOZOIC	QUATERNARY			Alluvium, gravel and eolian deposits.
		Mesa Verde		Grey, yellow, brown sandstone and
	CRETACEOUS	Mancos Shale	2500 /	blue grey to iron grey shales.
		Dakota ss.		Contain coal, Conglomerate.
	JURASSIC			Buff to grey and pink sandstone.
		Morrison	200 /	Variable in thickness. Contains reptilian remains, non-marine invertebrates, silicified wood.
	Unconformity			Formerly McElmo Formation.
		Navajo ss.	100 /	Usually buff to grey, white and red, massive, intricately cross-bedded sandstone. Contains quartz with some feldspar poorly cemented by lime and silica.
	JURASSIC(?)			Reddish irregularly bedded sandstone with grits and fine conglomerates. Minor shales and impure limestone. Contains dinosaur tracks, pelecypods, and plant remains. Formerly Todilto.
		Kayenta	40	
MESOZOIC	(Glen Canyon Group)*			Massive cross-bedded cliff forming, pale red to light buff sandstone; mainly quartz grains poorly cemented with lime and silica.
		Wingate ss.	275	
	Unconformity			Non-marine varicolored marls, thin sandstone and limestone conglomerate. Contains vertebrate, fresh water invertebrate fossils and silicified wood.
		Chinle	1182	
	TRIASSIC			Coarse sandstone, irregularly conglomeratic, grey in color. Fragments of petrified wood.
		Shinarump	20-60	
	Unconformity			Chocolate, red and grey sandstone and alternating red shale. Partially marine to westward.
		Moenkopi	50	
	Unconformity			Reddish cross-bedded sandstone. Composed variable sized grains white and red grains quartz with kaolin. Calcareous and iron cement. Cliff forming.
		De Chelly ss.	825	
PALEOZOIC	PERMIAN			Red sandstone and shales, uniformly bedded. Fossil plants.
		Supai	600 /	
PROTEROZOIC	PRE-CAMBRIAN			Massive and bedded grey quartzite.
				Granite.

*No diagnostic fossils discovered.

Compiled from various USGS reports by
Vincent W. Vandiver, NPS, Santa Fe, N.M.

CANYON DE CHELLY GEOLOGICAL REPORT (CONT.)

is absent on the north end of the uplift. It can be observed everywhere in the vicinity of the Monument that the Shinarump conglomerate (Triassic) rests unconformably on the de Chelly sandstones.

Pre-Cambrian

The oldest rocks on the Defiance uplift are quartzites, probably pre-Cambrian in age. They occur in Quartzite canyon, northwest of Ft. Defiance. Moenkopi sandy shales overlie the quartzite unconformably but the underlying strata are not exposed. Darton (2) states that the quartzite which occurs along the axis of the Defiance uplift is an old ridge which extends northwest from the Zuni mountain uplift in New Mexico and apparently persisted through a large part of Paleozoic time, since Permian rocks now abut against it. From well records we know that granite forms the core of the Defiance uplift.

Permian

Supai Formation

The type locality for the Supai formation, which consists of red sandstones and shales, is in Havasu canyon and adjacent portions of Grand Canyon. Here it consists of 100 to 1200 feet of red beds. A well drilled 18 miles southeast of Chinle, on the west flank of the Defiance uplift, encountered granite at 806 feet. In this well which started in the de Chelly sandstone, the Supai red beds were reached at 210 feet. Supai strata may be observed in Canyon de Chelly east of the junction with Monument canyon where the beds are composed of red sandy shales and fine grained sandstones. Supai red beds overlap on granite on the Defiance uplift. Darton (2) observed a short distance west of Ft. Defiance that there is a fairly strong break between the Supai formation and the overlying cross-bedded sandstones. He states that to the northward the distinction is lost somewhat by the development of coarser and lighter beds in the upper part of the Supai; suggesting transition. Fossil plants have been found in this formation three miles west of Ft. Defiance and they have been determined by paleobotanists (1) to be Permian in age.

De Chelly Sandstone

Conformably overlying the Supai formation in Canyon de Chelly are the vermilion, highly cross-bedded sandstones, which have been termed the De Chelly sandstones by Gregory (1). Edwin D. McKee, park naturalist at Grand Canyon National Park, has written a very interesting paper (4) on the De Chelly sandstone and its relation to the Coconino and other cross-bedded Permian sandstones of the southern portion of the Colorado plateau. The writer of this paper has taken the liberty to use portions of this reference by McKee.

Sandstones comprising the vertical walls of Canyon de Chelly were originally considered to be the equivalent of the Vermilion Cliff or Wingate sandstone of the Mesozoic by early geologists. As above stated they were termed the De Chelly sandstone in 1917 by Gregory and assigned to the Permian due to their stratigraphic position unconformably beneath the Shinarump conglomerate of the Triassic, and conformably above the Supai red beds containing a Permian flora. They have since been considered by Darton (2) and by Baker and Reeside (10) to be a continuation of the Coconino sandstone found to the west and southwest. McKee, in the more recent paper mentioned above, states that the De Chelly sandstones of Canyon de Chelly are a well defined formation composed principally of red cross-bedded sandstones which are different from the Coconino in the type of cross-bedding, variety of grain size, mineral composition and kind of cement. He concludes that the upper De Chelly sandstone and the Coconino sandstone were formed contemporaneously, but under different conditions of deposition and from materials derived from different sources. The source of the Coconino is regarded by McKee (3), in another paper, to be from the south and to have been deposited in the main as dune sands by the winds. The De Chelly was at the same time being formed from sands of a different source, probably from the north, as suggested by the remarkable uniformity of dip in the opposite direction. Most of the De Chelly section contains cross-bedding indicative of wind deposition; however, some portions especially in the upper part are deposited or at least reworked by water, as shown by the non-cross-bedded layers of shaly sand.

McKee finds that where the entire thickness of the De Chelly sandstone is obtained that there appears to be two well defined units separated by some horizontally bedded layers of very fine-grained, red, argillaceous sandstone. Also that by the color, type of cross-bedding and erosional behavior, the upper and lower sandstone members may be readily distinguished, but that in mineral composition they are similar in most places. The upper member generally forms bright red vertical cliffs while the lower member is reddish brown in color and usually weathers into rounded slopes containing many alcoves and cavities. Cross-bedding in the lower member shows dips in nearly every direction, whereas in the upper portion the beds are much longer and the slope is remarkably constant, ranging from southwest to southeast and suggesting that the source of the latter beds must have been from the north.

CANYON DE CHELLY GEOLOGICAL REPORT (CONT.)

The following section was measured by McKee near the mouth of Monument Canyon:

	Feet
<u>Shinarump Conglomerate</u>	
<u>Unconformity</u>	
<u>De Chelly Sandstone</u>	
1. Sandstone, fine grained: Vermilion red, cliff-forming. Cross-bedded. Composed in vertical section of a series of similar units, each with long, sloping, nearly parallel laminae which curve at their bases tangential to flat-lying, brown, shaly sandstone layers 6" to 3' thick, that separate the units. Twelve to twenty units ranging in thickness from four to eighty feet constitute this member. Sand grains of two sizes569.5
2. Sandstone, argillaceous. Deep red, very fine-grained, non-cross-bedded. Rests on truncated surface of underlying sandstone. Some traces of sand of type found in upper and lower members	36.0
3. Sandstone, fine-grained; Red-brown, weathers to rounded surfaces. Cross-bedded with short curving surfaces forming irregular wedges, truncated at bases. Sand grains of two sizes219.0
Total	824.5 ft.

Red Permian shales and flat-lying beds of sandstone.

Many geologists have observed the formation of arches, alcoves, and caves in the cross-bedded sandstones of the southern part of the Colorado Plateau, and numerous explanations have been offered as to their origin. These features are so constant in some sections that it would almost seem that one could chart a formation by spotting the cliff dwellings on a map, for almost invariably the Pueblo people have utilized these alcoves at one time or another for their settlements. These erosional features have been observed by the writer throughout southern Utah, northern Arizona and southwestern Colorado and it is concluded that they are the result of several factors, the most important of which are the structure and porous nature of the rocks in which they occur. The tangential cross-bedding permits ready access of the surface waters along the angular bedding planes in the porous sandstone. Such waters percolate into the face of the cliff and thus at first small units are weakened as the loose cement is dissolved and the shell-like forms are carried down by gravity.

These processes are repeated over long periods of time, the curved laminae being removed on an increasing larger scale, until the shells have cut back into the cliff to form alcoves large enough to house whole settlements of Pueblo people. The jointing is generally of lesser importance than the tangential cross-bedding in this process although in some instances it is a major factor. For many of the larger alcoves especially in Navajo Canyon, at Mesa Verde, and at Zion Park it is a common occurrence to observe a concentration of surface water at the top of a cliff directly over the alcove, giving a funnel effect, with the result that there is a concentration of water above the cave site. Alcoves and recesses may be observed in all stages of formation. In some cases the shells are so loose that they might seemingly be expected to crash to the floor at any minute, as in the alcoves in Navajo Canyon.

Near the head of the trail leading from the rim of Canyon de Chelly to the White House ruins are some minute erosion forms in the De Chelly sandstone which have been termed as worm borings by some and to the work of the wind by others. It appears that the wind has played only a very minor part in the formation of such features and that they may be attributed to normal processes of surface water carrying away the softer, less resistant, and more poorly cemented material to form the fine holes along the face of the cliff.

Triassic

Moenkopi Formation

This formation consists of chocolate, red and grey sandstone with alternating red shales. The Moenkopi does not occur in the vicinity of the Monument but is mentioned for completeness since it is present on the southern portion of the Defiance uplift. In this section, with the Kaibab limestone absent, the Moenkopi rests directly on De Chelly sandstone, and thins out just north of Ft. Defiance.

Shinarump Conglomerate

The Shinarump consists of coarse grey sandstone and conglomerate. It occupies much of the surface over the northern sector of the Defiance uplift and forms a resistant cap as may be noted from contacts along the rim of the canyons within the Monument boundaries. The conglomerate is unconformable with the underlying De Chelly sandstone and that there was a considerable period of erosion in post-De Chelly time and prior to the deposition of the Shinarump is attested from the very irregular contact, with numerous ancient valleys carved in the sandstone, and now filled with Shinarump conglomerate. Fragments of petrified wood are common in the Shinarump.

Chinle Formation

The name Chinle was proposed by Gregory (1) in 1917 to include a group of shales, "marls", thin soft sandstones and conglomerates lying above the Shinarump and below the Wingate formations. This formation although widely distributed in the Colorado Plateau province was named from the type locality in the Chinle valley, immediately west of Canyon de Chelly, where the entire section of 1,182 feet has been measured. The Chinle is usually considered to be the most beautifully colored formation in the Navajo country, certainly it is the most highly colored. These marvelous color effects may be seen in Beautiful Valley along the route north from U. S. Highway 66 to Canyon de Chelly; at Petrified Forest National Monument, east of Holbrook, Arizona; and in the vicinity of Cameron, on U. S. Highway 89, north of Flagstaff, Arizona. The rather pastel tones change with the angle of the sun but they are probably more effective at sunrise and sunset. The sediments are considered to be non-marine and to have been deposited by great shifting streams and in shallow bodies of water. During deposition there were occasional outbursts of volcanic activity in nearby areas with the result that there is considerable volcanic ash in the Chinle and some of the color variations are due to the presence of ash. Fossil vertebrates, fresh-water invertebrates, and quantities of silicified wood have been found in the Chinle which further attest to its non-marine character.

Jurassic (?)

Glen Canyon Group

This group consisting of the Wingate sandstone, Kayenta formation, and the Navajo sandstone contain no diagnostic fossils and are therefore assigned with some question to the Jurassic. They do not occur on the Defiance uplift proper and the details of the formations will therefore be omitted. A ridge of these sandstones form a prominent erosional feature on the west side of the Chinle valley. These massive sandstones are merely a remnant of a much more extensive deposit but rarely fail to attract attention of visitors. It should probably be stated that the uniformly bedded reddish sandstone which separates the Wingate and the Navajo is now called the Kayenta formation. It was formerly known in this area as the Todilto. Zion National Park is carved largely in the Navajo sandstone.

Jurassic

Morrison Formation

Unconformably overlying the Navajo sandstone is the Morrison formation. It is composed of buff, grey and pink sandstones and varies considerably in thickness. It has until recently been largely included in the McElmo formation. Important reptilian remains have been found in

these strata, also non-marine invertebrates and considerable petrified wood. Many complete dinosaur remains have been taken from the Morrison in the vicinity of Dinosaur National Monument in northeastern Utah.

Cretaceous

Black Mesa to the west of Canyon de Chelly is made up principally of Cretaceous formations, namely, the Dakota sandstone, Mancos shale, and the Mesa Verde group. This is a thick series of grey, yellow, and brown sandstone, and blue-grey or iron grey shale. The strata is drab in appearance and is somewhat monotonous as compared with the highly colored Jurassic and Triassic formations. Coal is mined from Cretaceous rocks on Black Mesa by the Hopis and Navajos. In the Gallup basin, in northwestern New Mexico, there is considerable coal mined for commercial purposes. These strata comprise the section at Mesa Verde National Park, in southwest Colorado, northeast of Canyon de Chelly.

Quaternary

Recent alluvium, gravels and wind blown sands are in evidence throughout the area.

Structure

Sedimentary strata are in most instances deposited in a horizontal position. Exceptions to this rule may be found in the walls of Canyon de Chelly where the rocks are cross-bedded and largely eolian in character deposited by the wind. Sediments after deposition are often times uplifted resulting in tilted, folded and broken or faulted strata. Their present attitude, or position, is called the geologic structure and this feature must not be confused with the land surface or the topography of the area since the sub-surface attitude of rocks does not necessarily bear any relationship to the configuration of the earth's surface.

The principal structural feature of the Monument area is, of course, the Defiance uplift. It is an anticline, with axis almost due north and south, extending from near the Santa Fe railroad almost to the Utah line, or a distance of over 100 miles. The structure is 30 miles or more in width. The attitude of the strata on the Defiance uplift are well illustrated by Darton (2) Plate 52, page 148). It will be observed that the last flank is the steeper, is faulted on the southeast, and that the beds then flatten to form the Gallup basin to rise again sharply along the Zuni mountain uplift. To the west, beds forming this flank of the uplift, dip gently at angles of 2° to 4° to form the great Black Mesa Coal Basin.

Structural considerations are important in a study of the Monument area since it is due to the uplift that streams have been given increased

gradient or added power to carve the beautiful canyons of de Chelly, Del Muerto, and Monument as we see them today.

The most detailed study of the structural history of the Navajo country has been made by Gregory (1) and the following is taken from his paper:

"The dates assigned to the several epochs of faulting, folding, and peneplanation during the history of the Plateau province rest on the assumptions that the upwarps trenched by the middle Colorado date from Pliocene, Miocene or late Eocene time. There is reason to believe, however, that the first profound faulting and flexing, which built the horizontal strata into a series of domes and monoclines, occurred at the end of the Cretaceous period....."

"Among the probable events in the Tertiary and Quaternary history of the Navajo country, the following are recorded:

1. A period of widespread folding associated with regional uplift from the Cretaceous sea. The Defiance uplift was one of the major structural features developed during this period, which is believed to date from the Cretaceous-Tertiary interval.

2. A period of erosion, during which the domes and ridges of Cretaceous rock were much reduced in height and a system of subsequent streams was developed. Earliest Tertiary.

3. A second period of differential warping, perhaps associated with regional depression. On the long slopes and on the floors of the basins thus formed the Eocene beds of continental origin were laid down.

4. Post-Eocene uplift.

5. A period of extensive and long-continued erosion, interrupted by intervals of quiescence and uplifts. During this period most of the Tertiary beds were removed, the present plateau blocks were outlined, and erosion surfaces of low relief were developed.

6. A regional uplift that revived the streams of the region and provided favorable conditions for the cutting of Glen Canyon and its many companions.

7. A period of aggradation - the filling of the rock canyons with alluvium in consequence of regional downwarp or climatic change.

8. A period of degradation - the trenching of gravel floors, of canyons, and of alluvial slopes on mountains.

The filling and trenching of the rock-walled canyons are not events of great antiquity and may have been accomplished within the period of

CANYON DE CHELLY GEOLOGICAL REPORT (CONT.)

human occupation. The cutting of Canyon de Chelly, and other profound gorges - gigantic pieces of river sculpture - does not demand a long period of geologic time. The conditions for river erosion in this region are so favorable that even a part of Quaternary time is sufficient."

Water Facilities

Water for the headquarters area is obtained from a well 100 feet deep. A gravel strata at from 46 to 50 supplies 25 gallons per minute with water level in the well at 20 feet from the top. The well is cased with 6" pipe. A three h.p. engine with deep well pump was installed by PWA in 1936 and supplies from ten to fifteen gallons per minute. From the well the water is pumped through a 1½" pipe line to a 5,000 gallon concrete reservoir which is buried on a hill near the Custodian's residence.

The well seems adequate to meet the requirements of present facilities.

ROADS AND TRAILS

There is at present a low standard road, about eight miles in length, from headquarters along the rim of Canyon de Chelly to the overlook opposite White House ruins. This road should be improved to enable the hurried traveler some knowledge of the Monument, especially for those who do not go into the canyons. Modern cars could not get over this road at the time of my last visit. Parking area near the overlook has been proposed. The roads leading into the canyons all have to be taken with care and preferably under the guidance of the Custodian.

A horse trail has been constructed in recent years to enable visitors to reach White House ruins from the rim of the Canyon. This trail is about 4,000 feet in length, contains several short tunnels to pass vertical ledges, and was treated with bituminous surface in 1936. No other trails are being considered for the present and I do not see that any are needed.

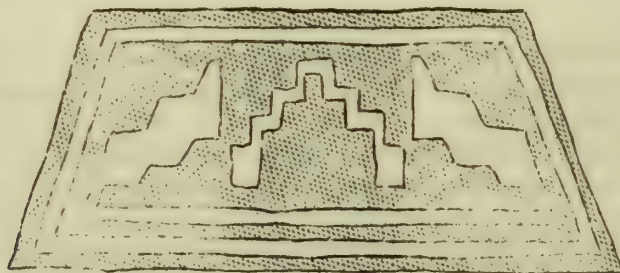
SIGNS AND MARKERS

This is one of the few Parks and Monuments that I have visited where I hesitate to recommend construction of signs to call attention of the visitors to geologic features. I feel quite sure that with the small number of visitors at Canyon de Chelly the Custodian will be able to handle the situation, at least for the present, and get across to those who seem interested the main geologic facts which I have endeavored to portray in this paper. This is especially true since I understand that a Park Service representative accompanies all parties on trail and canyon trips. A geologic map of at least the northeast portion of Arizona should be exhibited in the office.

It is also suggested that the references included in the attached bibliography be obtained for the Monument library. Those by Gregory (1). McKee (3 and 4) and Baker (6) will supply the geologic facts.

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Birds seen at Betatakin and Kit Siel

Sharp-shinned Hawk	Cooper Hawk
Western Mourning Dove	White-throated Swift
Red-shafted Flicker	Ash-throated Flycatcher
Western Flycatcher	Northern Violet-green Swallow
Long-crested Jay	Woodhouse Jay
American Raven	Pinyon Jay
Mountain Chickadee	Gray Titmouse
Lead-colored Bush-tit	Rock Wren
Canyon Wren	Western Tanager
Black-headed Grosbeak	Audubon Hermit Thrush
Spurred Towhee	Virginia Warbler

Plants collected July 7, 1937, by Neiclory Begay for a sing to be held at Ushin Elclisco Begay, Hagon, Ca., 1 mile from Marsh Pass up Tsegie Biko:

Cliff Rose : *Corvania mexicana*
Wild Rose : *Rosa Fendleri*
Current : *Ribes*
Gooseberry : *Grossularia*
Oregon Grape : *Berberis aquifolium*
Fendlerbush : *Fendlera*
Skunkbrush : *Rhus trilobate*
Gambel Oak : *Quercus gambelii*
Canyon Live Oak : *Quercus chrysolepis*
Utah Juniper : *Juniperus utahensis*
Pinyon Pine : *Pinus edulis*
Douglas Fir : *Pseudotsuga taxifolia*
Cherry : *Prunus*
Serviceberry : *Amelanchier*
Dogwood : *Cornus stolonifera*
Willow : *Salix* (2 kinds)
Pentslemon *Eatonii*
Pentslemon strictus
Paintbrush : *Castilleja* spp.?
Globemallow : *Sphaeralcea*
Scarlet Gila : *Gila* spp.?
Buttercup : *Ranunculus cymbalaria*
Marsh Grass : *Spartina cynosuroidis*
Mare tail
Common Reed : *Phragmites communis*
Broad Leaf Yucca
Horned Yucca
Ya Yucca
Slim Yucca

NAVAJO NATURE NOTES (CONT.)

June 30, 1937, birds noted on trip to Hawks Nest, Noki Wash, Navajo Co., Arizona, from Betatakin Ruins, Navajo National Monument, Navajo Co., Arizona, Upper Sonoran Grassland, Upper Sonoran Forest and Transition Zone, a distance of 22 miles.

Sharp-shinned Hawk : *Accipiter velox* (1 pair)
Cooper Hawk : *Accipiter cooperi* (1)
Western Mourning Dove : *Zenaidura macroura marginella* (2 pair)
White-throated Swift : *Aeronautes saxatalis* (Ca. 50)
Red-shafted Flicker : *Colaptes cafer collaris* (2 others heard)
Ash-throated Flycatcher : *Myiarchus cinerascens cinerascens* (2 pair)
Western Flycatcher : *Empidonax difficilis difficilis* (Ca. 70)
Horned Lark : *Otocoris alpestris* Spc. ? (Several seen, other heard)
Northern Violet-green Swallow : *Tachycineta thalassina lepida* (6 pair)
Long crested Jay : *Cyanocitta stelleri diademata* (2, others heard)
Woodhouse Jay : *Aphelocoma californica woodhousei* (Several seen)
American Raven : *Corvus corax sinuatus* (6 seen)
Pinyon Jay : *Cyanocephalus cyanocephalus* (Several small seen)
Mountain Chickadee : *Penthestes gambeli gambeli* (Ca. 15, others heard)
Gray Titmouse : *Baeolophus inornatus griseus* (Ca. 30, others heard)
Lead-colored Bush-tit : *Psaltiriparus plumbeus* (Ca. 20 Seen)
Rocky Mountain Nuthatch : *Sitta carolinensis nelsoni* (3 seen)
Rock Wren : *Salpinctes obsoletus obsoletus* (10 seen, young and old together)
Chestnut-backed Bluebird : *Sialia mexicana baridi* (several seen)
Mountain Bluebird : *Sialia currucoides* (Several seen)
Meadowlark : *Sturnella* Spc.? (2 heard)
Spurred Towhee : *Pipilo maculatus montanus* (2 seen)
Western Vesper Sparrow : *Pooecetes gramineus confinus* (6 seen, others heard)
Desert Black-throated Sparrow : *Amphispiza bilineata deserticola* (Ca. 10 seen)
Northern Sage Sparrow : *Amphispiza nevadensis nevadensis* (Several seen)
Brewer Sparrow : *Spizella breweri* (6 seen)

July 1, 1937, trip from Hawks, Noki Wash, Navajo Co., Arizona, to Navajo Mountain Camp at War God Spring, San Juan Co., Utah. This trip covered Upper Sonoran Grassland, Upper Sonoran Forest, the bottom of Piute Canyon, Lower Upper Sonoran Grassland, with Transition under the Canyon Rim; Navajo Mountain Upper Sonoran Forest, Transition, Canadian and lower Hudsonian

Hawks Nest to head of Piute Canyon:

Turkey Vulture: *Cathartes aura septentrionalis* (2 seen)
Sharp-shinned Hawk : *Accipiter velox* (1 pair)
Cooper Hawk : *Accipiter cooperi* (1 seen)
Western Mourning Dove : *Zenaidura macroura marginella* (2 pair)
Red-shafted Flicker : *Colaptes cafer collaris* (2 seen)
Western Flycatcher : *Empidonax difficilis difficilis* (Ca. 15 seen)

NAVAJO NATURE NOTES (CONT.)

Woodhouse Jay : *Aphelocoma californica woodhousei* (2 seen)
American Raven : *Corvus corax sinuatus* (3 seen)
Pinyon Jay : *Cyanocephalus cyanocephalus* (2 small flocks seen)
Gray Titmouse : *Baeolophus inornatus griseus* (3 seen, others heard)
Lead-colored Bush-tit : *Psaltiriparus plumbeus* (6 seen)
Canyon Wren : *Catherpes mexicanus conspersus* (3 seen)
Western Gnatcatcher : *Polioptila caerulea obscura* (2 seen)
Spurred Towhee : *Pipilo maculatus montanus* (1 pair)
Desert Black-throated Sparrow : *Amphispiza bilineata deserticola* (8 seen)
Northern Sage Sparrow : *Amphispiza nevadensis nevadensis* (6 seen)
Brewer Sparrow : *Spizella breweri* (2 seen)

Head of Piute Canyon, to Navajo Mesa:

Western Mourning Dove : *Zenaidura macroura marginella* (1 pair)
Woodhouse Jay : *Aphelocoma californica woodhousei* (2 seen)
Rock Wren : *Salpinctes obsoletus obsoletus* (8 seen young and old together)
Audubon Hermit Thrush : *Hylocichla guttata auduboni* (2 heard)
Black-throated Gray Warbler : *Dendroica nigrescens* (1 seen)
House Finch : *Carpodacus mexicanus frontalis* (4 males, 6 females seen)
Western Vesper Sparrow : *Pooecetes gramineus confinis* (4 seen)
Brewer Sparrow : *Spizella Breweri* (6 seen)

NAVAJO MESA TO NAVAJO MOUNTAIN

Gray Flycatcher : (Ca. 20 seen)
Woodhouse Jay : *Aphelocoma californica woodhousei* (8 seen)
Pinyon Jay : *Cyanocephalus cyanocephalus* (3 flocks of Ca. 15 each)
Gray Titmouse : *Baeolophus inornatus griseus* (6 seen)
Lead-colored Bush-tit : *Psaltiriparus plumbeus* (2 seen)
Chestnut-backed Bluebird : *Sialia mexicana baridi* (4 seen)
Mountain Bluebird : *Sialia currucoides* (6 seen)
Western Gnatcatcher : *Polioptila caerulea obscura* (6 seen)
White-rumped Shrike : *Lanius ludovicianus excubitorides* (4 pair seen,
from action they apparently had a nest in the near vicinity)
Northern Sage Sparrow : *Amphispiza nevadensis nevadensis* (4 seen)
Brewer Sparrow : *Spizella breweri* (6 seen)
Screech Owl : *Otus* sp.? (4 heard)
Broad-tailed Hummingbird : *Selasphorus platycercus* (several seen, others
heard)
Red-shafted Flicker : *Colaptes cafer collaris* (2 seen)
Long-crested Jay : *Cyanocitta stelleri diademata* (Ca. 10 seen)
Clark Nutcracker : *Nucifraga columbiana* (2 seen)
Pygmy Nuthatch : *Sitta pygmaea pygmaea* (Ca. 30 seen)
House Wren : *Nannus* (2 pair seen)
Western Robin : *Turdus migratorius propinquus* (10 seen)
Townsend Solitaire : *Myadestes townsendi* (2 seen)

July 2, 1937, Navajo Mountain, War God Spring to top of the Mountain, San Juan Co., Utah. Transition, Canadian and Lower Hudsonian:

Sharp-shinned Hawk : *Accipiter velox* (1 seen)
 Western Mourning Dove : *Zenaidura macroura marginella* (2 pair
 Broad-tailed Hummingbird : *Selasphorus platycercus* (several seen, others heard)
 White-breasted Woodpecker : *Dryobates villosus leucothorectis* (1 heard)
 Long-crested Jay : *Cyanocitta stelleri diademata* (Ca. 10 seen)
 Woodhouse Jay : *Aphelocoma californica woodhousei* (2 heard)
 Clark Nutcracker : *Nucifraga columbiana* (2 seen, others heard)
 Mountain Chickadee : *Penthestes gambeli gambeli* (3 seen)
 Gray Titmouse : *Baeolophus inornatus griseus* (4 seen)
 House Wren : *Nannus heimalis pacificus* (2 pair seen)
 Western Robin : *Turdus migratorius propinquus* (Ca. 10 seen)
 Townsend Solitaire : *Myadestes townsendi* (2 seen)
 Spurred Towhee : *Pipilo maculatus montanus* (1 heard)

 MONTEZUM CASTLE
 BIRD NOTES

By Betty Jackson

A list of the birds seen this month follows:

Arizona Cardinal	Western Mockingbird
Yellow-billed Cuckoo	American Merganser
Mourning Dove	Texas Nighthawk
White-winged Dove	Arizona Hooded Oriole
House Finch	Black Phoebe
Red-shafted Flicker	Say Phoebe
Vermillion Flycatcher	Gambel Quail
Black-crowned Night Heron	Cliff Swallow
Green Heron	Desert Black-throated Sparrow
Treganza Blue Heron	Hepatic Tanager
Hummingbird (Ariz. Blue-throated)?	Western Tanager
Killdeer	Sonora Yellow Warbler
Arkansas Kingbird	Canyon Wren
Cassin Kingbird	Aplomado Falcon ? (Norman)

We've seen a lot of young birds this month. On June 26 we got a good look at the baby American Mergansers. They were well feathered, and, though they couldn't seem to fly yet, were very good at diving and swimming. Earl and I were wading up a long hole in the creek, counting the carp population, when we saw the whole family of Mergansers ahead. As we came close to the end of the hole, the old male decided to lead them back between us rather than try to take them to the next hole. He flew over us, and the babies all dove and swam around and between us. One of them had an awful shock when he came up a few feet in front of Earl, instead of on the other side. There were seven of them, and all got by us safely.

BIRDS AT MONTEZUMA (CONT.)

and with very little fuss.

The same day we saw five baby Green Herons, well able to fly, but extremely clumsy about it. One almost fell out of a tree after lighting there.

A young Kingbird and several young Mourning doves have been seen. The doves are fairly tame, I suppose because they want to put off flying as long as possible, even though they are good at it.

Our Say Phoebe finally gave up her second nest of eggs. On July 1 she was very inattentive, and by the eighth had abandoned the nest and left the vicinity. I wonder if she found out that the young were dead in the eggs. The shells looked dark.

The birds that were missing last month must simply have evaded me, because they are all back again, Vermillion Flycatcher, Texas Nighthawk, and Cliff Swallows. The Great Horned Owl we have heard, but not seen. July 8, I saw the Cliff Swallows wheeling through the air by the cliff west of the Castle, and from the tenth on they have been seen nearly every day around the Castle itself.

On July 15 Norman Jackson first identified the call of the Yellow-billed Cuckoo. It has been around since then, and we were both lucky enough to see it, on the 22nd and 23rd.

Earl and I ran into a covey of baby Quail on the evening of July 19. They were second brood (?) smaller than baby chicks, striped and spotted. The father fussed about and clucked to them and they stayed under a bush, where they were very hard to see. When we moved on, his notes changed, and they came scurrying towards him through the brush. We could only be sure of a count of six, though there may have been more.

On the 23rd, while swimming, I saw a Desert Black-throated Sparrow hopping about among the rocks and brush of the bank. He is one of the very "chic" members of the Sparrow family.

Two last minute bird notes include a tentative identification of a Green-backed Goldfinch and an immature, and of a Swainson Hawk.

*****OOO*****

RUMINATIONS

By the Boss

Chief, it was just four years ago that you took over as Director and our monthly report carried the following as a foreward:

"This is the first monthly report we men of the

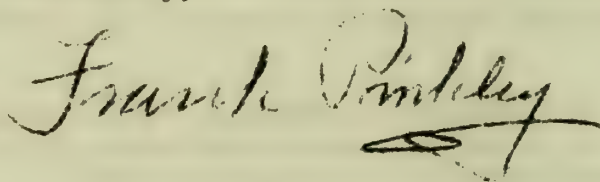
Southwestern Monuments have the pleasure of making to you as Director. May it be the first of a long line of reports reaching down through the coming years!

"Some of us have worked with you for about 14 years and you have bound us to you by your patience, kindness and courtesy. We are your men and we will back you with our money, chalk and marbles. We know the duties we owe to the Government and I believe you will find we will fulfill them always to the best of our ability, but I wish you would feel that after our official loyalty to the Director is given, there is a personal loyalty to you which we wish you would call upon when things look black and you need some extra service not called for in our regular line of duty; you will get it promptly and it will be delivered with a smile."

I don't know that we can add much to that after the first four years service with you as Director, Chief, but there most certainly isn't a word of it that we want to take away; we are still your men and we still have that personal loyalty to you in addition to the official loyalty to your position.

All the hectic days of CWA, WPA and ECW have beaten upon us and gone their way. We have grown beyond any dreams of four years ago; we measure our forces by the thousands now where we measured them by the hundreds then; but I am sure the nucleus of old-timers will join us in wishing you many more years of hard work as the head of the Service.

Cordially,

A handwritten signature in cursive script, reading "Frank P. Lindsey". The signature is written in dark ink and features a prominent, sweeping flourish at the end of the name.

SOUTHWESTERN MONUMENTS

MONTHLY REPORT

AUGUST, 1937



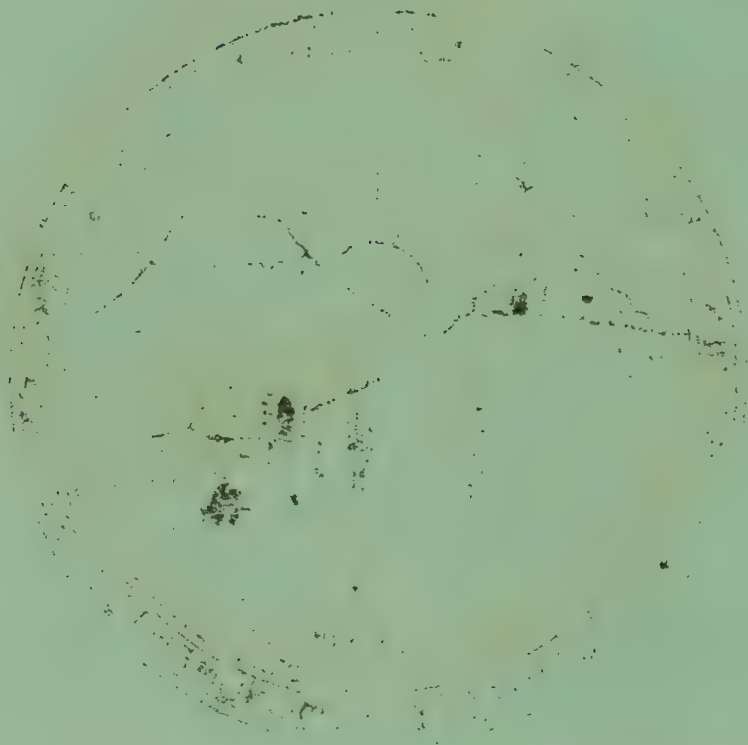
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SERVICE

SOUTHWESTERN MONUMENTS

AUGUST, 1937, REPORT

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SOUTHWESTERN MONUMENTS PERSONNEL

HEADQUARTERS, Southwestern Monuments, Coolidge, Arizona: Frank Pinkley, Superintendent; Hugh M. Miller, Assistant Superintendent; James Luther, Chief Clerk; J. H. Tovrea, Assistant Engineer; Dale S. King, Assistant Park Naturalist; Charlie R. Steen, Junior Park Archeologist; Millard Singerman and Luis A. Gastellum, Clerk-Stenographers; William H. Sharpe, ECW Clerk; James W. Brewer, Roving Park Ranger; Gertrude F. Hill, Student Technician.

FIELD STATIONS

AREA (Acres)

1. <u>Arches</u> - Moab, Utah. J. M. Turnbow, Cu.	4,520
2. <u>Aztec Ruins</u> - Aztec, N. M. T. C. Miller, Cu. H. Summerfield Day, Park Ranger-Archeologist	25.88
3. <u>Bandelier</u> - Santa Fe, N. M. C. G. Harkins, Cu. Jerome W. Hendron, Woodrow Spires, and Donald J. Lehmer, Temporary Park Rangers	26,026.20
4. <u>Canyon de Chelly</u> - Chin Lee, Ariz. Johnwill Faris, Cu. Alfred Peterson, Temporary Park Ranger. Thomas B. Onstott, Temporary Park Ranger.	83,840.
5. <u>Capulin Mountain</u> - Capulin, N. M. Homer J. Farr, Cu.	680.37
6. <u>Casa Grande</u> - Coolidge, Ariz. A. T. Bicknell, Cu. J. Donald Erskine, Park Ranger.	472.50
7. <u>Chaco Canyon</u> - Chaco Canyon, N. M. L.T. McKinney, Cu. Homer Hastings, Temporary Park Ranger.	21,512.37
8. <u>Chiricahua</u> - Douglas, Ariz. Frank L. Fish, Cu. Homer Bennett and Bronson Harris, CCC Guides	4,480.
9. <u>El Morro</u> - Ramah, N. M. Robert R. Budlong, Cu.	240.
10. <u>Gila Cliff Dwellings</u> - Cliff, N. M. No Custodian.	160.
11. <u>Gran Quivira</u> - Gran Quivira, N. M. Geo. L. Boundey, Cu.	610.94
12. <u>Hovenweep</u> - Cortez, Colo. No Custodian	285.80
13. <u>Montezuma Castle</u> - Camp Verde, Ariz. Earl Jackson, Cu. Jesse D. Jennings, Park Ranger.	560.
14. <u>Natural Bridges</u> - Blanding, Utah. Zeke Johnson, Cu.	2,740.
15. <u>Navajo</u> - Kayenta, Ariz. John Wetherill, Cu. Milton Wetherill, Park Ranger-Historian.	360.
16. <u>Organ Pipe Cactus</u> - Ajo, Ariz. No Custodian	330,670.
17. <u>Pipe Spring</u> - Moccasin, Ariz. L. Heaton, Acting Cu.	40.
18. <u>Rainbow Bridge</u> - Rainbow Lodge, Ariz. No Custodian	160.
19. <u>Saguaro</u> - Tucson, Ariz. No Custodian	63,284.
20. <u>Sunset Crater</u> - Flagstaff, Ariz. David Jones, In Charge	3,040.
21. <u>Tonto-Roosevelt</u> , Ariz. Irving McNeil, Temp. Park Ranger	1,120.
22. <u>Tumacacori</u> - Tucson, Ariz., Box 2225. L. R. Caywood, Cu. James Felton, Park Ranger.	10.
23. <u>Walnut Canyon</u> - Flagstaff, Ariz. P. Beaubien, Jr. Park Arch.	960.
24. <u>White Sands</u> - Alamogordo, N. M. Tom Charles, Cu.	142,987.
25. <u>Wupatki</u> - Flagstaff, Ariz. David J. Jones, Park Ranger	35,865.30
26. <u>Yucca House</u> - Cortez, Colo. No Custodian	9.6
Total Area (in acres)	724,659.96

CONDENSED REPORT

IN WHICH IS GIVEN THE HIGHLIGHTS OF THE MONTH

Coolidge, Arizona
September 1, 1937

The Director
National Park Service
Washington, D. C.

Dear Mr. Director:

The Condensed Report for the month of August, 1937, follows:

<u>TRAVEL</u>	<u>August, 1937</u>	<u>August, 1936</u>	<u>August, 1935</u>	<u>1937 to date</u>
Aztec	3,056	2,658	2,250	12,497
Bandelier	3,825	3,180	2,475	12,177
Canyon de Chelly	337	169	135	1,175
Capulin Mountain	7,000	4,500	---	21,110
Casa Grande	1,804	1,487	1,376	31,764
Chaco Canyon	1,313	1,272	1,031	6,865
Chiricahua	1,077	906	958	8,152
El Morro	561	470	333	1,873
Gran Quivira	892	730	385	3,885
Montezuma Castle	1,503	1,578	1,910	8,574
Natural Bridges	150	72	120	470
Navajo	71	---	---	94
Pipe Spring	111	105	256	
Saguaro	511	---	---	10,224
Sunset Crater	1,193	1,231	1,216	3,529
Tonto	296	324	360	5,091
Tumacacori	1,079	1,037	906	17,447
Walnut Canyon	2,590	2,034	2,047	8,844
White Sands	12,471	18,753	7,013	82,368
Wupatki	417	436	290	1,734
Totals	40,257	40,942	23,201	* 238,662

* Total does not include travel to monuments at which accurate travel counts are not maintained. The travel year 1937 is reckoned from Oct. 1, 1936, to Sept. 30, 1937.

Although the actual reported figures show a slight drop in travel to the monuments in August, 1937, as compared with August, 1936, we believe that more visitors actually are on the road and visiting our areas. Difference in the method of computing White Sands visitors, or else a fairly inexplicable drop of more than 6,000 at that monument explains the apparent decrease. Actually, August travel records were broken at Aztec, Bandelier, and possibly other monuments.

SOUTHWESTERN MONUMENTS

75 CONDENSED REPORT FOR AUGUST, 1937

CONDENSED REPORT (CONT.)

000 GENERAL

010 MATTERS OF UNUSUAL IMPORTANCE

Chaco Canyon: Chettro Kettle ruin is in very bad shape in places and should receive stabilization before the excavating agencies finish this field session.

El Morro - Farmers continue to haul water from the reservoir, lowering the level, and intensifying the bad taste and dangerous qualities of this very unsatisfactory sole supply of the custodian and his wife.

020 WEATHER

All northern monuments report an unusually hot and dry summer. A freak frost occurred near El Morro August 19. Casa Grande in the south reported unusually high average temperatures, but Chiricahua and Tumacacori, in the higher lands nearer the Mexican border, had much rain, the latter perhaps more than ever reported in August.

022 ROAD CONDITIONS IN MONUMENT APPROACHES

Road conditions were about as usual except that Tonto reported its entrance road so bad that visitors turned back after experiencing a little of it, and, in contrast, Walnut Canyon's heavy travel was partly attributed to unusually dry and smooth entrance highways. A new highway across the Jemez Mountains brings more visitors to Bandelier.

100 ADMINISTRATION

123 VISITS BY NATIONAL PARK SERVICE PERSONNEL

Headquarters: Charles Richey, Clinton Rose, Thomas E. Carpenter, Wm. Stevenson, Erik Reed.

Aztec Ruins - Kenneth Disher, James Brewer, Thomas Onstott.

Bandelier - Lyle Bennett, Chas. Richey, Dorothy Fisher, Tom Conley, H. S. Day, Kenneth Disher, Dale King.

Canyon de Chelly - Jim Hamilton

Capulin Mountain - W. H. Wirt, Adrey Borell.

Casa Grande - Frank Fish, George Keller.

Chaco Canyon - T. C. Miller, Thomas Onstott, H. S. Day, Kenneth Disher

Chiricahua - Chas. Richey, Thomas Carpenter

El Morro - Erik Reed.

Gran Quivira - Kenneth Disher, Erik Reed.

Tumacacori - J. H. Tovrea, Clinton Rose, Lyle Bennett, Fred D. Nichols, Frank Fish, Wm. Stevenson, Eugene Stonehocker, Luis Gastelum.

Walnut Canyon - Erik Reed, Carl Schmidt, Thomas Onstott, Kenneth Disher, Dale King, David Jones.

Wupatki - Dale King

CONDENSED REPORT (CONT.)

150 NEW EQUIPMENT

Casa Grande - 500 feet of garden hose to utilize waste water from coolers for irrigation.

Chiricahua - Gas-operated refrigerator transferred from Tumacacori.

El Morro - Gas-operated refrigerator transferred from Tumacacori.

Tumacacori - New electric refrigerator.

180 PUBLICITY

Gallup Ceremonial - August 22, 23 and 24 six small booths at the Gallup ceremonial displayed to several thousand visitors information concerning Chaco Canyon, Canyon de Chelly, and Aztec Ruins National Monuments. The exhibit was awarded a blue ribbon "for general excellence and educational value."

Tumacacori - Pictures of Tumacacori Mission appear on the covers of recently issued Tucson and Nogales directories of the Mountain States Telephone & Telegraph Co.

200 MAINTENANCE, IMPROVEMENTS, NEW CONSTRUCTION

210 MAINTENANCE, UNUSUAL

Bandelier - Ruins stabilization on the big kiva at Tyuonyi Ruin almost finished except for clean-up.

Chaco Canyon - The Mobile Unit for ruins stabilization in preparing for its work finished 1,800 feet of water line, laid 900 feet of pipe, erected a water tower and installed a tank, erected six tent cabins, gathered 20 cubic yards of building stone, and excavated 12 cubic yards of back-filled dirt from kiva corners in Pueblo Bonito.

230 NEW CONSTRUCTION

Bandelier CCC

Hotel garage to parapet wall height. Vigas and roof sheathing complete.

Hotel dining room and kitchen to interior finishing stage. Kitchen cabinets completed and in place. Interior plaster completed. Flagstone floor started.

Water intake outlet connected to canyon water main.

Hotel sanitary sewer project started and 90% completed.

Hotel pipe line project started.

Gas tank, fittings and miscellaneous equipment installed in hotel oil house.

Monument telephone line hooked up.

Hotel stone walls as planned 100% complete.

Fortestry crew cut timber for building all month.

Rock quarry crew worked all month.

CONDENSED REPORT (CONT.)

230 NEW CONSTRUCTION (CONT.)

Chiricahua CCC -

Rhyolite-Balanced Rock trail advanced 1,800 feet; 1,500 feet of light construction remain to connect this trail with the Sara Deming-Balance Rock section, and this will complete the trail project at Chiricahua.

400 square yards backsloped on Bonita Canyon road half mile above Bonita Park.

200 square yards backsloped on same road one mile above Bonita Park.

Considerable highway maintenance.

Rock work on east wing of administration building complete. Walls at front and rear of existing building completed. West wing rock work to six feet height and it will be turned over to carpentry crew about September 1.

Excavation for basement and footings finished for employee's residence.

Rock quarry in operation all month.

White Sands - Grade completed on entrance road. First rock course on and rolled in. Sand and clay being put on at rate of 1,200 cubic yards a day.

300 ACTIVITIES OF OTHER AGENCIES IN MONUMENTS

320 NON-GOVERNMENT AGENCIES

Chaco Canyon: University of New Mexico General Field Session with 40 students and staff excavating a small site east of Tseh So (excavated last summer) which is east of Casa Rinconada. Is late Pueblo II in time. Students are divided into lower, upper, and research groups. School of American Research also operating in canyon and their work will be described next month.

350 DONATIONS AND ACCESSIONS

Headquarters Loan Library: Received 112 periodicals, pamphlets, reprints, and books.

Montezuma Castle: From Fred G. Steenberg the museum received display enlargements of photos he took of the Castle in 1893. These are the oldest known photos of the ruin.

Tumacacori - In excavating for foundations of new museum building several pieces of copper plate and some broken pottery was found. A very interesting religious medal was also discovered and is added to the museum collections.

Walnut Canyon: Four pottery vessels and five baskets were transferred from Headquarters to this monument to start an adequate museum collection.

CONDENSED REPORT (CONT.)

400 FLORA, FAUNA, NATURAL PHENOMENA

Montezuma Castle: Several additions were made to the botanical check list and herbarium.

Rainbow Bridge: Hugh Cutler of Milwaukee, Wisc., collected *Tradescantias* and will furnish information and publications later.

410 RANGER, NATURALIST, AND GUIDE SERVICE

Aztec Ruins: H. Summerfield Day entered on duty as ranger August 2.

Casa Grande: Guide stories are being standardized as to factual content, and will be perfected for use of new personnel.

Montezuma Castle: Ranger Jesse D. Jennings entered on duty Aug. 1.

Walnut Canyon: It was neglected to state in the July Report that Paul L. Beaubien entered on duty July 1 as Junior Park Archeologist in the combined Walnut Canyon-Saguaro position.

Wupatki: Ranger David Jones entered on duty August 10.

420 MUSEUMS

Headquarters loan library: 351 books catalogued, 58 repaired, 1,406 catalog cards made. Necessary rearrangement effected.

Aztec Ruins: Eight new cases received August 18 and 23.

Bandelier: Temporary installation in one room of museum gives some museum service to visitors.

Casa Grande: Park Archeologist Steen and Custodian Bicknell finished temporary installation in new cases. One room was converted into an office for the Casa Grande staff. An unannounced number of books were obtained for the nucleus of a Casa Grande library.

440 INSECT CONTROL

Bandelier: Web worm cycle at low point so no spraying necessary this summer.

Pipe Spring: Considerable control of red ants around headquarters.

460 BIRDS

Tonto: Hundreds of Gambel Quail seen on monument.

470 ANIMALS

Montezuma Castle: Gila Monster killed by farmer on land which adjoins the monument. Is farthest north record of which Custodian Jackson knows.

Tonto: Javelina or peccary noted during the month on the monument. Rock squirrels unusually abundant.

CONDENSED REPORT (CONT.)

600 PROTECTION

650 SIGNS

El Morro: Road signs changed to new road location. Much maintenance necessary because of vandals.

Walnut Canyon: Entrance signs unsatisfactorily designed and need re-building, to obtain better visibility.

700 ARCHEOLOGY, PREHISTORY, HISTORY

Tumacacori: Custodian Caywood and Architects Fred Eastman, Chas.

Maguire, and Frederick Nichols in line with policies of the Historic American Building Survey visited historic sites in Santa Cruz county, including Calabasas, Guevavi, Fort Crittenden, and Babocomari Ranch.

MISCELLANEOUS

MAIL COUNT

Incoming:		
Official	2,016	
Personal	786	
Total incoming		2,802
Outgoing:		
Official only	2,220	2,220
Total postal mail		5,022
Telegrams:		
Incoming	38	
Outgoing	41	
Total telegrams		79
GRAND TOTAL PIECES OF MAIL HANDLED		5,101

Cordially,

Frank Pinkley,
Superintendent.

FIELD REPORTS

FROM THE MEN ON THE JOB

MONTEZUMA CASTLE

By Earl Jackson, Custodian

STATISTICAL

<u>Visitors:</u> - - - - -	1,503; Aug., 1936, 1578.
Arizona visitors by cars - - - - -	843 % of total 56.02
California visitors by cars - - - - -	224
Iowa visitors by cars - - - - -	87
Texas visitors by cars - - - - -	80
Total states (incl. Wash., D.C.) - - - - -	39
Foreign countries - - - - -	3 Eng. Italy, Ontario.

Conveyance:

Cars - - - - -	388
Arizona cars - - - - -	217

Contacts - All visitors contacted.

Trips - - - - -	261
Attendance - - - - -	1,175
Those who climbed ladders - - - - -	893 or 59.41% *
Average trip time - - - - -	29.98 minutes.
Museum lectures - - - - -	238
Attendance - - - - -	1,146
Average museum time - - - - -	18.19 minutes.

* My July figure was wrong. Change from 75.5% to 55.07%

WEATHER AND ROADS

Weather has been unusually dry. Precipitation was 1.16 inches, and occurred on August 12, 16, and 18. 16 days were partly cloudy, and three were cloudy.

Beaver Creek has quit running in front of the Castle now, and toward the upper end of the monument the remaining water is quite muddy and filthy.

Valley roads are in good condition. Highway 79 is under construction in two places, between Jerome and Prescott and between Cottonwood and Sedona. This construction work amounts to putting a light oil coat over the gravel surface, and while the road has been objectionable for a few miles at a time, I think it has not interfered with travel. For a day or so the dirt road between here and Stoneman Lake was quite muddy.

MONTEZUMA CASTLE (CONT.)

SPECIAL VISITORS

Park Service

None. It should be mentioned in this connection, however, that Kenneth B. Disher, of the Washington Office, on his museum inspection trip, called up the custodian on the morning of July 25 from Prescott, seeking transportation to Montezuma Castle. Unfortunately, this call came on Sunday morning, and it happened I was entirely alone. My ranger had not arrived yet, and I had worked a temporary man the maximum of 30 days, and had not been able to pick up a local man for one day's guide work. So it was necessary for me to spend the day in the Castle, and I was unable to go after Mr. Disher. Nobody regrets this unfortunate set of circumstances more than I.

Other Visitors:

July 25 - P. H. Bell, chief engineer of the State Land Department, was an interested visitor.

July 27 - J. W. Keating, instructor at the Palo Verde Ranch School for Boys, Prescott, Arizona, was in with a very interested group of 12 boys.

August 1 - Mr. G. B. Hartman, assistant professor of forestry, Iowa State College, and R. B. Thomson, associate professor of forestry, Iowa State College, were visitors.

August 4 - Odell Julander, instructor in forestry, Iowa State College, Ames, Iowa, was in with a party of 40, consisting mostly of students in forestry from Ames. They were from a forestry camp spending six weeks at Mormon Lake.

August 6 - Lieut. R. H. Calkins, purchasing and contracting officer for the Arizona District, C.C.C., was a very interested visitor.

August 11 - Odell Julander paid a return visit with 34 more forestry students from the Mormon Lake camp. All of these boys were as well behaved a group as I have ever seen.

August 14 - Capt. Thomas D. Tway, subdistrict commander No. 1, of the Arizona CCC District, Phoenix, Arizona, was a visitor.

On this same date a party of ten eastern boys, several of them repeat visitors, camped with us. They are completely sold on the place.

August 15 - Mr. and Mrs. Robert A. Darrow, of the University of Arizona, spent an interesting morning with us. Mr. Darrow is an instructor in botany at the University.

MONTEZUMA CASTLE (CONT.)

August 18 - Instructors Keating and Wirick, of the Palo Verde Ranch School, Prescott, Arizona, brought in another group of 12 boys.

August 19 - Guy Hobgood, superintendent of the Hualpai and Havasupai Indian Reservations, was in.

August 20 - A Mr. Glen Lukens, of Los Angeles, a ceramics teacher, was a very interested visitor, and gave us some worthwhile information on pottery.

August 21 - L. C. Houghton, educational adviser from the Verde CCC camp, F-39-A, was in with a group of 22 CCC boys.

Mr. M. G. Jorgenson, who developed the weatherproofing material which Standard Oil now uses on adobe wall construction, was a very interested visitor from California.

August 22 - Capt. and Mrs. J. V. Lowe, from 8th Corps Area Headquarters, El Paso, Texas, were in.

Comments

While our list of "Special Visitors" may seem somewhat drawn out, we found something about everyone of them which was interesting. I think, in general, we have had an amazingly high percentage of interested visitors for the summer month of August.

PERSONNEL

Our vacant ranger position was filled by the arrival of Mr. and Mrs. Jesse D. Jennings on the night of July 29. Mr. Jennings entered on duty on July 30. He came to us highly recommended, and as yet I see no cause for disillusionment.

CONSTRUCTION

The Central Arizona Light and Power Company, in running a power line up Beaver Creek, crossed the northwest corner of the monument, and one pole is planted on Park Service land.

ACQUISITIONS

Early this summer Mr. Fred G. Steenberg, of Fond du Lac, Wisconsin, was an interested visitor. It developed that in 1893 he visited Montezuma Castle and took several photographs of it. I told him we were always seeking old pictures of the Castle, and he promised to send us some when he returned to Wisconsin. On July 26 we received a set of these photographs, mounted on stiff paper in a large glass frame. They now occupy a wall in our museum. In addition to showing the front view of the

MONTEZUMA CASTLE (CONT.)

Castle these shots show several views which were taken in the building of construction features. These are the oldest scenes we have seen to date.

PUBLICITY

On August 11 we received a clipping from Connecticut, taken from the New Haven Evening Register. It was entitled "Vegetable Plate a la Cliff Dweller," and was a feature article on foodstuffs found at Montezuma Castle. The material was undoubtedly taken from the May Monthly Report, in which we had included a list of plants identified by Mr. Fred Gibson, of the Boyce-Thompson Southwestern Arboretum. They closed with the statement that archeologists were greatly puzzled that spinach had not been found in the cliff dwellings, and wondered if that meant the cliff dwellers did not eat spinach.

NATURE NOTES

On July 26 we found a Brown Garter Snake - *Eutoenia eques* (Reuss) - about 30 inches long, attempting to swallow a large toad which it had killed. It was swallowing the hind end first, but disgorged the toad as we approached. The snake now reposes in alcohol.

On August 4 Norman saw the first porcupine reported on the monument. It was at the top of a limestone hill and was headed for the creek. We did not get the species. We suppose the porcupine was coming down to sample our mesquite beans.

August 15 brought a neighbor from across the creek on land adjoining the monument. He claimed he had recently killed a Gila Monster there, and described it in such detail we knew he was not mistaken. This was our first knowledge that Gila Monsters range this far north.

On August 16, about an hour after a heavy rain, Betty and I saw an unusual sight. It was a multiple honeymoon of the large red ants. They were congregated very densely over an area of about 100 square feet. A few minutes later we found one of the brides who had already shed her wings and left her husband, and was very busily engaged in digging a hole in which to build a den.

On August 18 we saw a peculiar battle which waged furiously for over half an hour on the hard packed ground in front of the museum. A slender, round bodied, smooth scaled snake, about 14 inches long, was having a mighty tussle with a four and a half inch centipede. The snake was trying to get the enemy's head in its mouth, and while he was maneuvering for this hold the centipede thrashed wildly about, part of the time wrestling with his larger opponent in what looked like a death grip, and part of the time walking off backward, pulling the snake quite easily over the smooth ground. Finally the centipede's

MONTEZUMA CASTLE (CONT.)

head disappeared in the snake's mouth. When this happened, the whip-like end of its tail, with the sharp claw tips, slapped into the snake's body, burying the points. This did not bother the snake, however, for he went right on trying to swallow the head. You see, although a centipede has sharp claws on its legs and tail end, the only poison glands are in its two jaws, in the head.

At length the centipede whipped loose and started drunkenly off, its head half smashed. The snake poised its head a moment, grabbed the victim once more, and started off toward a rock wall. Here the combatants disappeared in a crack, to fight it out in privacy.

We got a good description of the snake, but cannot identify it with Ditmars. Maybe someone can help us. The body was pale yellow from tip to tail, 14 inches long, round, smooth scaled, head indistinct from body, nose rounded, tail three or four inches long. Eyes were rounded. There were 15 or 17 rows of scales around the body, with bottom scales complete. Incomplete dark brown rings went across the back and down the sides of the snake. These rings were three to four scales wide.

A King's Lizard was recently captured by Jane Jennings. This lizard is *Gerrhonotus Kingii* (Gray).

Odell Julander and Robert Darrow (mentioned in visitor list) gave us a number of new plant identifications, and checked old ones previously submitted as accurate. The new ones follow:

Arrow bush - - - - -	<i>Hymenoclea Mongyra</i> .
Snake weed or Broom weed - - - -	<i>Gutierrezia sarothrae</i> (sp?).
Algerita - - - - -	<i>Odostomon Fremontii</i> . (Genus sometimes called <i>Berberis</i>)
Water Moody - - - - -	<i>Baccharis glutinosa</i> .
Desert Willow - - - - -	<i>Chilopsis linearis</i> .
Fremont Cottonwood - - - - -	<i>Populus Fremontii</i> .
Prostrate or Redroot Pigweed - -	<i>Amarathus californicus</i> (sp?).
Juniper - - - - -	<i>Juniperus scopalorum</i> .
Lamb's Quarter - - - - -	<i>Chenopodium Fremontii</i> (Wats).
Rat tail Cactus - - - - -	<i>Opuntia leptocaulis</i> .
Graythorn - - - - -	<i>Zizyphus lycioides</i> .
Wild buckwheat - - - - -	<i>Eriogonum trichopes</i> (sp?)
Mentzelia - - - - -	<i>Mentzelia multiflora</i> .
Mormon Tea - - - - -	<i>Ephedra Nevadensis</i> .
Puncture Vine - - - - -	<i>Tribulus terrestris</i> .
Russian Thistle - - - - -	<i>Salsola pestifer</i> .
Gnat Weed - - - - -	<i>Polygonum aviculare</i> .
Jimson Weed - - - - -	<i>Dature meteloides</i> .
Fluff Grass - - - - -	<i>Triodea pulchella</i> .
Bush Muhly Grass - - - - -	<i>Muhlenbergia Porteri</i> .
"Fake" Palo Verde - - - - -	<i>Canotia holocantha</i> .

MONTEZUMA CASTLE (CONT.)

A word or two of explanation is due. Of the plants listed, I am sure the puncture vine and the Russian thistle are not native. "Fake" Palo Verde is the only name I know at the present time for a low tree which I have called Palo Verde for years. To the layman the trees look alike, except that this tree has rough bark, and the true Palo Verde has a smooth greenish bark.

While Mr. Darrow was here he was allowed to take a few plant specimens with him to check on when he returns to Tucson. He promised to send identifications on them later.

GENERAL

August has been one of the most satisfactory months this custodian has seen since entering the Service. Usually summer visitors are so uninterested that one's brain goes into hibernation, but August has produced plenty of intellectual challenges.

We are glad to welcome Mr. and Mrs. Jennings into the Service and hope they will like us and our work. If Bob Rose were back with us he would probably refer to those ups and downs which Jesse has ahead of him in the next few months on those Castle ladders, but we wouldn't do it for the world.

Mr. Steenber has made a real contribution to the Service with his early pictures of the Castle. Let us try to get his story of the visit, Earl, for the Supplement.

Chief, I feel like Earl has turned in a corking good report this month, don't you? - F.P.

*****OOO*****

EL MORRO

By Robert R. Budlong, Custodian

TRAVEL

During the month of August a total of 561 persons visited this national monument. Of this number, 517 received guided trips. Those not receiving guided trips were people who entered the grounds, inspected the inscriptions, and only came to the office to register after they had inspected inscriptions; those who arrived at the monument during one of the custodian's trips to town for supplies; and those who desired to hold picnics or take the trail over the rock or past inscriptions unattended. All were contacted, however, with the exception of those who arrived during the absence of the custodian.

EL MORRO (CONT.)

Our 517 visitors were shown our monument attractions in 94 guided trips; time occupied, 9,100 minutes; average time per trip, 96.8 minutes. Parties averaged 5.5 persons.

On July 25 we had the pleasure of welcoming Erik Reed to the monument. His visit was brief, as rain was falling in the pass to the east, but we hope he will soon pay us another, and longer visit.

Father Stoner visited here August 4, and the custodian profited greatly from his visit, both in pleasure and in the acquiring of much new and valuable information. He, also, arrived at a time when a light rain was falling.

We also had the great pleasure, on August 13, of being visited by Dr. Ruther M. Underhill and party. Their visit was, of course, all too short, but we are hoping for the pleasure of a longer one in the near future.

WEATHER

Another month has rolled by with no rain at this national monument. And this is considered to be the rainy season. We had a few light sprinkles, but only sufficient precipitation to settle the dust. No water drained into the water reservoir. A few showers have fallen in the nearby vicinity, but they were confined to a few small, scattered localities. Crops nearby are suffering because of insufficient moisture. Many farmers claim they will not make a crop.

The night of the 19th of August we had an early frost, a few plants in neighboring fields being frosted. Ice formed on water at the logging camp a few miles distant. We seem to be having a freak season.

Water

I know this has been mentioned in past reports, but it still is deserving of comment. No rain having fallen to replenish the supply, save once during the entire summer, and water-haulers coming daily from near and far, the level of the water in the reservoir continues to sink steadily. Boss, you should see the stuff. I've had to discontinue boiling it, because it has become so thick that upon cooling, after boiling, it jells, and has to be eaten in chunks, with knife and fork. This does not satisfy thirst. I have by now become so accustomed to the violent comments of our visitors relative to the water that the other day when a lady asked how long I had been damming the water, I told her I had been doing so steadily ever since I first saw the pool and heard it was the only available supply of drinking water at the monument. I am still wondering if I might not have misunderstood her question, though she seemed to find my reply entirely satisfactory.

SIGNS

It continues to be impossible to keep road signs in place more than a few days at the most. Whenever I go to Gallup for supplies, which is about every ten days, I take along hammer and nails, and stop to repair what signs I can. I continue to find that some have been taken down and erected on the wrong side of the road, pointing in the wrong direction.

Several new signs were ordered during the month, the principal one to be erected at the entrance road. During the early part of the travel month the old entrance signs, which were seldom seen, being on the old road which is not now used, were taken down and erected on the new road. A large percentage of visitors still continues to attempt to take any cowpath or rabbit run seen diverging from the main road, however, for reasons impossible to understand.

EQUIPMENT

Last week we received the Electrolux refrigerator transferred here from Tumacacori. Our great thanks, Boss. We hope to have it installed in the cabin and in working condition before much longer. The problem right now is where to put it, and we have decided that the only available room is at the foot of the bed in the "blue room." (That is, the one-car garage used as a bedroom; we call it the "blue room" because one can see such great areas of blue sky through the cracks in the walls and ceiling) It is thought that this installation will have one distinct advantage: during the winter the custodian can sleep with his feet resting on one of the shelves of the refrigerator. Since temperatures here go down to around 45 degrees below zero in the winter, the interior of the refrigerator with cooling mechanism going full-blast, should be around 45 degrees above zero. This being 90 degrees higher than the circumambient atmosphere in the blue room, I should be able to keep my feet sufficiently warm during the cold weather. For many reasons we greatly appreciate this new item of equipment.

ICE CAVES

The ice in the Perpetual Ice Cave about 19 miles east of the monument is being chopped away steadily. I understand that much is taken out to supply refrigerators at the lumber camp at the base of the Zuni Mountains; more is utilized to cool various and sundry beverages at a saloon or two at La Tinaja; and the remainder taken by visitors and local inhabitants. Regular picnics are held there every week-end or so, I am told, the people taking ice-cream freezers and the necessary ingredients, and making ice-cream there for their picnics. Though I never have been able to inspect the cave, I am told by visitors that several tons of ice must have been removed within the last month.

GENERAL

The month has been the peak month this season for visitor travel. With schools opening in the month of September, it is expected that the coming month will mark the beginning of the decline in the number of visitors per month to this national monument.

In closing the custodian should, perhaps, make his apologies for this and last month's reports. The water supply apparently has been responsible for his going into a marked "decline", and after a month or more of it he is somewhat below par.

O

We are glad Padre Stoner got over to see Bud because now he will get interested in helping us out over there at El Morro with our historical problems just as he has at Tumacacori in Southern Arizona. Amongst his other work he has been Chaplain for a lot of CCC camps in Southern Arizona for the last couple of years and drops in at headquarters about once a month for a talk with us about Padre Kino and mission history. What a difference there is in the last couple of centuries between Padre Kino's thirty or forty miles per day over his district and Padre Stoner's three hundred or more of the present! But I expect the percentage of sinners holds about the same.- F.P.

*****OOO*****

WHITE SANDS

By Tom Charles, Custodian

We have had two good rains at the White Sands in the past month. But what is a rain at the White Sands? It neither does any good nor any harm. Neither rain extended out as far as Mr. Underhill's road project which was bad for he needed rain badly, nor to headquarters, which was good for Mr. Veal and Johnnie are waiting for roofing and a heavy rain would not be so good for their new administration building.

The first rain came one Sunday about five p.m. when there were 25 or 30 cars in the Turn-Around and in the picnic grounds. It was a regular old-fashioned desert rainstorm - big drops splashed holes in the sand half as big as the palm of one's hand and the visitors soon scurried to the shelter of their cars. All save two - two small boys, apparently twins $2\frac{1}{2}$ to 3 years old, attired in little more than the good Lord gave them, stayed on the hills during the storm and what a time they had. It was hard to tell who was having the most enjoyment - the children in the rain or the crowd watching them. It was at least something new at the Great White Sands.

The new road project is moving right along - the grade is up, and before you get this report the first rock course will be on and rolled

in. This is no wheelbarrow job, I can assure you. They put sand and clay on at the rate of 1,200 yards a day. By the way, you may be interested to know that we took the sand from the face of one of the long white hills to the left of the road going in, and the scar is so nearly effaced already that a stranger could not distinguish the place.

We are having a detour around the construction work on Mr. Underhill's project. Only once before have we had to detour since the road was built into the Sands in 1934. That time the clay road was wet and slick, but this time we just had too much business. Thirty trucks hauling sand and a couple of graders processing made the detour necessary.

On Sunday, the 14th, we had over 100 cars over that detour and before night several cars had to be lifted out of the chuck-holes. Funny incidents occur, even on serious occasions. I came upon one of the cars which was stuck in the dry dust of a chalk hill - every time he spun his wheels the floury dust fairly fogged the landscape. A fair young nymph was taking dust baths first on one side of the car and then on the other. When I drove up she rushed up to me with the information that "Oh, it is too bad - too bad - and we are on our honeymoon!" It was not long until enough men had gathered to pick the car up and set it on solid soil again, but no amount of argument could persuade that young couple to go on out to the heart of the Sands. They had enough.

By six o'clock that day the heavy machinery had been pulled off the road project and by night traffic did not have to detour. It was fortunate too for there were 24 cars at the Turn-Around at dark when I left there and the evening crowd had just started.

We have had big crowds this month - mostly evening visitors and that does not give us a break on the count for after dark visitors never register. For instance last Saturday night, the 21st, the watchman at the headquarters said over 100 cars went in after dark. The man on the heavy grader, working on the night shift, supported the statement by the information that he had to quit work at eight p.m. because of the traffic. "There were between 50 and 60 cars drove in there between six and eight o'clock," said he. "The dust was so bad and the cars so thick that I felt it was not safe to keep the roller on the road." On the night previous to that the Methodist church had a big picnic, besides several other groups. Friends who were there say there were 45 or 50 cars out that night. On Sunday, the 22nd, there were close to 150 cars at the Heart of the Sands in the day time. There were 32 cars - at least 160 people, there when I left at dark. None of those night visitors register, and we have no check on them whatever but no doubt our basis of 14% registration still gives us a fair estimate, of the total number of visitors.

Sunday, the 22nd, I counted cars at the intersection for one hour. There were 64 cars passed in 60 minutes and 19 of them went into the Heart of the Sands.

WHITE SANDS (CONT.)

It is a long step, Boss, from the day about four years ago when we all stood at the edge of the Sands and wondered if we could build a road into them - if we would be able to find it some morning after a New Mexico windstorm; if we would ever draw as many as 50 cars a day; and if there would ever be any money for a headquarters building. This baby of ours is certainly a modern one - it has had but few of the ills of childhood.

This month we have had 32 states and three foreign countries represented on the registration records - figuring those as average days we had 1,746 register, and on the basis of 14% registration our total would be 12,471 for the month.

o

Tom, we are not to first base yet with White Sands, and by the same token, we haven't begun to have our troubles with it yet either. It is one place where the visitor curve can go straight up if it wants to for all I care if we can just get the Budget to give us one employee for each additional 30,000 visitors and enough to keep him on the job. Your visitors can't do much harm and when we get our new administration area blown in, we will have the traffic pretty well under control, so let them come.

It won't be long now until we have a man on the ground and you are going to be put on the spot with your visitor count, Tom. I think some of the boys might be interested in starting a little pool on what a poor guesser you are, from rumors that filter in to us from the field, but I'm on your side until the figures prove us wrong.

*****ooo*****

WUPATKI

By David J. Jones, Park Ranger

With the addition of 28,000 acres to Wupatki National Monument one must spread himself pretty thin to cover it. With pride, however, I can announce it as being the fifth largest in the Southwestern Monuments with no doubt but what it is the finest.

Since my arrival most of my time has been taken up with the process of getting settled in my quarters and acquainting myself with the surrounding country. Dr. and Mrs. Colton have been extremely helpful to me in orienting myself, and I am looking forward to many pleasant contacts with them in the year to come. Many of the interesting finds of Wupatki would not have been mentioned to the visitors, but for the efforts of Dr. Colton.

Within the last month there have been 280 visitors at the Citadel, and 180 at Wupatki. 53 of these having been duplications, a total of 417 persons visited the monument as compared to 290 in August, 1936. Most of those whom I have contacted seem to be very interested and do

not regret traveling the slow road into the monument. Among the noteworthy visitors for the month are Dr. and Mrs. Colton who brought out a group of 24 for a picnic supper. For the past few days Phillip Welles has been here taking a rest before a proposed cat hunt into Mexico.

As to the roads, I suppose that one might say that they are no better nor worse than usual - the best being none too good. Numerous small showers, however, have kept the road between Wupatki and Sunset Crater passable.

Specific data regarding the weather is not available for this month, but there has been a shower almost every day since my arrival on August 15. I might add that the Snake Dance at Walpi today (August 23) seems to have been quite successful. At least, it has rained here most of the afternoon.

Among the proposed improvements is the construction of a protection for an exposed burial which is in one of the rooms. This burial is of considerable interest to the visitors and should be more adequately protected than is possible with the present tarp. In addition, a stabilization crew has been promised for the late fall or early winter to stabilize some of the walls. Dale King, from Headquarters, accompanied me on the first trip here and took several photographs of those portions of the ruins which are in a bad state of repair. Let us hope they will produce results.

SUNSET CRATER

By David J. Jones, In Charge

During the month of August a total of 1,193 visitors registered at Sunset Crater, as compared to 1,216 in 1936. Remarks on the ledger indicate that the Crater should be better advertised by the use of road signs, and that there should be some better means of conveying information to the visitor than by the pamphlets which are posted there at the present time. Since it is impossible to place a permanent ranger at the Crater with present appropriations, I hope to make some progress on the plan for a wayside shrine with exhibits regarding the Crater.

o

And here is another new man to welcome into our Service, Davey Jones. He will be up at Wupatki eight months of the year and be third trick man at Casa Grande the other four months. It is going to be a great life, Davey, if you don't weaken, and we are glad you have thrown in with us. Be sure to keep the quarters in fine order because those quarters at Wupatki are known across the United States and most of your visitors, as you have already found out, will want to see how you fit into the prehistoric rooms. When Charlie Steen was on lone post at Tonto he always had a perfectly clean towel hanging by the wash bowl. The field was about equally divided on whether he never used a towel.

or kept the one he used under the mattress.

I am glad you have caught the problem at Sunset Crater. We have been worrying about that for two or three years and any suggestions you can work up will be gladly received. We aren't unanimously sold on a wayside shrine there. Personally I believe it will be vandalized, but if you are willing to work it up we will do everything we can to back you. This may be another time I am wrong and I hope it is. - F.P.

*****000*****

CHIRICAHUA

By Frank L. Fish, Custodian

GENERAL

This should be classed the month of smiles for the Cochise County cattlemen. The faces of the stockmen have broadened considerably since the rainy season has arrived. With the prospects of better cattle prices, everything favors a better than average year. Another interesting item for Cochise County is the lowering of the tax rate this year from \$1.30 per hundred dollar valuation to 76 cents. This is due mainly to near capacity operation of the mines of the county and the Phelps-Dodge Smelter at Douglas. The smelter produced over one million pounds of copper a day for five days this year, setting new records for that plant. The number of new cars points toward the general trend of purchases made by the workers and this is verified by statements of amusement operators who believe they are not getting their share of the money in circulation compared with the similar conditions of the post-war boom days.

WEATHER

Electrical storms were spotted over the Chiricahua Mountain region until August 9. Since that date daily rains have occurred in the monument and neighboring areas. Unlike the cloudburst or "Gully Washer" of July 19, the rains this month have been gentler of the type referred to locally as a "Ground Soaker".

Temperatures have been mild and without exact figures it is believed the mean maximum for the month was around 85.

The lookout was closed August 14, two days later than the closing date for the Forest Service stations in this region. We have been fortunate so far this season in not having any fires in the monument and one of major proportions in the neighboring Forest Service area.

ROADS AND TRAILS

Approach roads have been open all month and except for short sections under construction or damaged by storms have been in good condition.

CHIRICAHUA (CONT.)

Monument roads and trails have been maintained and improved by the CCC under Mr. Stevenson and details will be found in his report.

VISITOR STATISTICS

<u>States</u>	<u>Cars</u>	<u>Visitors</u>	<u>Foreign Countries</u>
Arizona	204	780 (73%)	Mexico
<u>Other (31)</u>	<u>62</u>	<u>297 (27%)</u>	<u> </u>
Totals	32 266	1,077	1

Educational contacts: 59 parties, 303 people, 2,553 minutes.

On August 8 a new count on educational contacts was started. Prior to this the only count made was on hiking parties desiring guides and parties desiring a guide to ride with them from Headquarters to Massai Point through Bonita Canyon. The following figures are offered for comparison: Period July 22 to August 8 - 7 parties, 29 people, 880 minutes; total visitors for period, 469; this shows a 6-plus percent educational contacts with an average time of 125-plus minutes. August 8 to 22, inclusive - 52 parties, 274 people, 1,673 minutes; total visitors for period, 608, a 45% educational contact with an average time of 32-plus minutes.

NATIONAL PARK SERVICE OFFICIALS

Charles A. Richey and Thomas Carpenter were in August 2. We spent the afternoon with Bill Stevenson going over the proposed trail location into Picket Canyon. Everyone had a good workout climbing over the scenery.

TRIPS BY THE CUSTODIAN

August 10 a trip was made to Tumacacori National Monument by way of Tucson for the Electrolux refrigerator transferred to this monument. The refrigerator was installed in the ranger's quarters on the 17th.

August 20 I accompanied Bill Stevenson to Headquarters. It was a pleasure to meet everyone there again and see the many improvements.

CIRCULARS

Pamphlets of the "Wonderland of Rocks" have been mailed to the Chambers of Commerce of Lordsburg, N. M., El Paso, Texas, and El Centro, Calif., U. S. Tourist Bureaus at New York City and Washington, D. C.

I am glad you have revised your method of reporting visitor contacts,

CHIRICAHUA (CONT.)

Frank. You weren't getting a fair shake in the comparative table with the other monuments.

We at Headquarters enjoyed that little visit too and were glad to get the chance to go over the master plans with you. - F.P.

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CHIRICAHUA CCC

By Wm. Stevenson, Project Superintendent

Rhyolite-Balanced Rock trail advanced 1,800 feet.

This trail is now completed through Hunt Canyon and approximately 1,500 feet of very light construction remains to connect with the Sara Deming-Balanced Rock section. It is estimated that this connection, which will mark the completion of our present trail program, will be made by September 1.

Two crews have continued on the backsloping project throughout the month. Four hundred square yards of banks were sloped one-half mile above Bonita Park and all materials were used for surfacing.

Two hundred square yards of rock banks were sloped one mile above Bonita Park and the materials were used in rebuilding low cut banks which will serve in lieu of guard rail. Explanatory note: During the construction of Bonita Highway, the contractor found it convenient to "day light" "through cut" sections at regular intervals to facilitate turning his equipment. These sections are sufficiently wide to permit rebuilding a low bank without decreasing the specified road width.

Highway maintenance was necessary during the greater part of the month. Successive rains filled the ditches and blocked culvert basins. A few small slides occurred in the section where banks have not been sloped. One half mile of road was surfaced.

Rock work on the east wing of the administration building is complete. The masonry walls at front and rear of the existing building are complete, and the rock work on the west wing is complete to a height of six feet. This building will be turned over the carpentry crew about September 1.

Excavation, for the basement and for the footings of the employee's residence, is complete.

Rock quarry operation continued throughout the month.

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Bill's job is going right along. We will be glad to see the end of the trail program, and the only other item we are likely to ask for
SOUTHWESTERN MONUMENTS 95 MONTHLY REPORT FOR AUGUST, 1937

in the way of trails will be a fire trail over in the northwest portion of the monument where the boys tell us we have a "hot spot". We need some more utility area construction and one more residence and a lot more road trimming, so we hope to have Bill and the boys with us for some time yet.

By the way, I've forgotten to ask Bill if he ever hears from Tiny who graduated out of our CCC camp and went off to play college football and finish his schooling. I expect he is making good; he did with us.

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CASA GRANDE

By A. T. Bicknell, Custodian

WEATHER

Days clear -	-----	20
Days partly cloudy -	-----	10
Days cloudy -	-----	1
Maximum temperature -	-----	114° on July 26, 26 & Aug. 3 and 4.
Mean Maximum temperature -	-----	107.8°
Maximum temperature -	-----	68° on August 3.
Mean Minimum temperature -	-----	74.8°
Precipitation -	-----	1.4 inches, July 26, 28, Aug. 12, 15, 17, 21, 22, and 24.

This past month has seen our temperatures running well above normal. The mean maximum temperature for the month is more than four degrees above normal, and that makes quite a difference to us here. It means that there were many more really hot days, and few or no breathing spells in between. Electrical storms continue nightly making radio reception very poor. Our rainfall this year is slightly below normal.

GENERAL

As is expected in August our travel figures begin their slow climb from the low of July toward the high of the winter season. Following the trend of previous months this year, this past month again shows a higher travel count than the corresponding month of the past two years. An increase of 191 visitors over last month was also shown. This year bids fair to be a record travel year.

The visitors in the summer are naturally bothered with the heat and this past month with our temperatures running well above normal many visitors refused to leave their cars in the extreme heat of the day and contented themselves by a hurried view of the ruins from the car, and then drove on. Of our total of 1,804 visitors to the monument, 1,593 were contacted. Our visitors continue to come from all over the country. 39 states were represented, District of Columbia, Alaska, and three foreign

CASA GRANDE (CONT.)

countries, Canada, Scotland, England, and the Netherlands. Breaking the figures down a little shows us that 51% of our visitors were from Arizona, nine percent from Texas, and seven each from California and Oklahoma. Thus those four states accounted for 74% of our total. Other states having more than 20 visitors were in order: Missouri, New York, Ohio, Illinois, Kansas, and Michigan.

We were happy to meet Dave Jones on August 10. Dave is to be the Casa Grande-Wupatki ranger, spending the summers at Wupatki, and the winters at Casa Grande. He left on August 14 for Wupatki National Monument.

It has long been our hope to work out some sort of a definite outline as to what a proper talk in the ruins and the museum should contain. This would be especially valuable to a new man. With that in mind, the Boss and Ranger Erskine have written out their stories as nearly as they could remember telling them, and these will be submitted to the naturalist office for corrections and suggestions. Then perhaps some definite outline can be drawn up.

USE OF MONUMENT FACILITIES BY THE PUBLIC

Total trave: 1937 - 1804; 1936 - 1487; 1935 - 1374; 1934 - 1376.

Of the 1,804 visitors to the monument, 1,593 were contacted on guided trips through either the ruins or the museum, or both. 7,445 minutes were spent guiding 219 parties through the ruins for an average time of 34 minutes. 3,025 minutes were spent guiding 152 parties through the museum for an average time of 19.9 minutes. Breaking those figures down to find out what each guide contributed we find the following:

Custodian Bicknell: Ruins, 84 trips, 37.7 minutes average; Museum, 57 trips, 22.3 minutes.

Ranger Erskine: Ruins, 129 trips, 31.3 minutes average; Museum, 93 trips, 18.6 minutes.

These figures cannot be considered normal for any long period since a great many days during the month Ranger Erskine was guiding alone, thus accounting for his larger number of trips and somewhat shorter time per trip. During the past few months it has been necessary for the custodian to attend to many other duties around the monument which had been allowed to slip for many years and thus now require considerable time to straighten out. It should also be considered that on the ranger's days off the custodian was guiding alone. All these facts must be considered in an understaffed monument. The fact that many visitors who received ruins trips did not receive museum trips can be readily explained by the fact of one man working alone thus not being able to give service to everyone in the museum because of having to go from one ruins trip to another.

CASA GRANDE (CONT.)

One trailer party stayed overnight and the picnic grounds were used nearly every day by one or more parties. There were no special parties during the month.

NEWSWORTHY VISITORS

National Park Service visitors for Headquarters included: Charles A. Richey, assistant regional landscape architect; Clinton Rose, resident landscape architect; Landscape Architect Thomas E. Carpenter; Project Superintendent William Stevenson from Chiricahua National Monument; and Regional Archeologist Erik Reed. National Park Service visitors for the monument included: Frank Fish, custodian of Chiricahua National Monument, and George Keller, CCC traveling mechanic.

Other visitors worthy of mention were: Dr. John Y. Keur of Long Island University, long a friend of Southwestern Monuments; and Dr. E. M. Brigham, Sr., director of the Public School Museum, Battle Creek, Mich.

IMPROVEMENTS

Received during the month were 500 feet of garden hose which is being put to good use carrying water from the air coolers to various parts of the residence and headquarters area for irrigation purposes.

Installation of the new cases for the museum continued and they are now all in place and seem very satisfactory. Charlie Steen, junior park archeologist, supervised the installation aided by Custodian Bicknell. The installation of the new cases now makes surplus of the old ones, so if any of the custodians of other monuments would like any or all of the old cases we would be glad to get rid of them, as we do not have adequate storage space for them. The cases constructed for Aztec Ruins National Monument were taken in two trips by Tom Onstott on Aug. 16 and Aug. 21, and we hope arrived safely.

Eugene Stonehocker left on his annual leave on Aug. 6, but before leaving he overhauled two of the government cars, 1803 and 8124. Stonehocker also made a trip to Tumacacori National Monument to deliver a new electric refrigerator there and to pick up a mechanical one which has been shipped to El Morro National Monument.

One change during the month which the monument personnel especially appreciates is the changing of one of the old museum display rooms into an office. Formerly our desks have been in the display room, and there has been no opportunity for concentrated work with visitors at one's elbow all the time. A new 16-inch ceiling light fixture has been installed which will diffuse the light instead of creating the glare which formerly prevailed. The personal mail boxes have been installed in our office now, thus relieving a crowded situation in the headquarters office.

CASA GRANDE (CONT.)

On the advice of the naturalist division letters were written to many sources in an attempt to build up a monument library. Results so far have been most gratifying. The Southwest Museum presented us with their material on this area. Smithsonian Institution has been most cooperative sending us many very fine publications. And the University Press of the University of California sent several fine papers. We are going to continue our efforts in this line until we have a really fine Casa Grande library. We hope to obtain considerable material on things other than archeology, though our archeological publications will of course be most important.

NATURE NOTES

Little of major interest has occurred in the nature line during the month. The snakes referred to last month continue to frequent the Casa Grande, frightening the visitors and the bats. One Horned Rattlesnake or Sidewinder was killed just back of the administration building one evening by Chief Clerk Jim Luther. That makes the third rattlesnake of the year.

Since the first of the month all of our barrel cacti have come into bloom, and, while not spectacular, are of much interest to our eastern visitors.

Several large scorpions and centipedes have been found and killed in the various residences. Only one actual casualty has occurred, however. Mrs. Hugh Miller was stung on the foot by a large scorpion one night, and suffered some pain for several days, but no serious consequences. Ranger Erskine was bitten on the hand several times by a small Western Whipsnake he found in his dining room, but the snake not being poisonous, no effects were felt.

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These are very interesting visitor figures, and Al brings out a change which has occurred in the operation of Casa Grande within the last couple of years. Formerly the Headquarters office had time to detail help to the monument for handling visitors. This is no longer possible and Casa Grande is running now strictly as a two-man monument with an additional part-time ranger through the winter months when the peak load occurs.

The new arrangement of the Casa Grande museum is proving an interesting study. We do not expect to know for three or four months how successful it is because the boys will have to get accustomed to the change.

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CANYON DE CHELLY

By Johnwill Faris, Custodian

"TIME MARCHES ON", so we are told over certain radio hookups, but with us this summer time has more than marched on and we find that it is only a question of days until our normal season is considered over and we prepare for the winter months.

Maybe one reason the time has slipped up on us so is that some 337 visitors were here during the month and helped us spend several pleasant hours. Mr. and Mrs. Hamilton were in with Mrs. Conley of the Santa Fe Office, and while the Canyon was running and we could not get Mrs. Conley up the Canyon we did go up and down the trail wading across to the White House. She practically promised to come back and bring her husband with her some time when we could go up the canyons.

Taking it all in all there has been a good share of the time that we were able to go up the two canyons in private cars. In several instances we had to shovel some sand and one I remember I managed to run into a channel flow and we were some three hours getting it out. No damage at all was done and the party from New York in the car we were guiding were thrilled to death at getting stuck in the Canyon. I would much rather, however, give them a thrill some other way. I imagine that Tommy would much rather I did too since he was drafted into water detail and responded in a noble manner.

Administrative features of the monument for the month have not been at all out of the ordinary. Unfortunately the pickup went entirely haywire the early part of the month and permission was received to have it overhauled in Gallup since it was not possible to drive it to Coolidge. Only a few days after getting it back an axle went out and damaged one wheel considerably. Fortunately, however, arrangements were made with the CCC to fix it up here thus saving us a great deal in mechanic fees. The Indian Service mechanic was away and we could not get him. At the present writing the Ford is in tip-top shape, however, and we have hopes of it holding up for a time. It is hard to imagine how hard the canyons are on a car that must go up quite often and if we are to use a car in the Canyons much I think we should consider a new car every two years. Even a minor defect at times here might mean that we would lose a car.

Ranger Onstott has been on special assignment for a time leaving Pete and me to handle the Snake Dance crowds but we had no trouble and Tommy lost out on a lot of good parties.

Several visitors this month have taken the time and trouble to hunt me up and tell me that they were very much impressed with the service given by both Ranger Onstott and Ranger Peterson. It pleases me a lot and I know it does you to have the visitors favorably comment on our men.

CANYON DE CHELLY (CONT.)

Well, Boss, I want to leave early in the morning for Gallup and do what I can for the exhibit for the Ceremonial; I shall include more in the next report.

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Johnwill is correct in saying his country is hard on cars. So is Chaco and El Morro and others we could mention. It is quite clear, however, that our present appropriations are not going to afford a car every two years to these monuments. We will do well to get around with replacements in four years at the present rate so all field men please take note and handle rolling equipment about as carefully as you would handle your watch - and I don't mean oil it once a year.

We are glad to hear Tommy and Pete are still sending away satisfied visitors. We are not surprized, of course, because it is a habit with both of them. Which reminds us that we put into our files this month several letters from enthusiastic visitors complimentary to Johnwill.F.P.

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TONTO

By Irving McNeil, Park Ranger

All aboard for the Tonto National Monument Special!

Travel over our roadways has not been as heavy as it might have been this month. However, everybody who has taken the trip to our mountain resort (cliff dwellings) agrees that the trip was worth every cent of energy expended. The trip is a bit warm, but we try to keep our stations, the museum and the cliff dwelling, as cool, clean and comfortable as possible. Satisfied customers are our best type of publicity, and we believe that we are turning them out. Different from the prophet, we are recognized in our own country - note the number of people from Arizona, 107.

Next time, Travel Tonto Way:

Passenger list of the month

Total -----	296
Total guide trips -----	58
Total number attending trips -----	226
Total time on trips (minutes) -----	3,049
Average time on trips -----	52.5
Average attendance on trips -----	3.8
Total museum lectures -----	66
Total attendance museum lectures -----	233
Total time museum lectures -----	735
Average time museum lectures -----	11.1
Average attendance museum lectures -----	3.5

Crew

Dale S. King from Headquarters.
Frank Russell from Santa Fe.

Interesting facts about our System

This month began with a bang, or rather a scream. At about midnight of the 25th of July we heard a mountain lion.....Several more holes appeared in Room 6 and were filled.....Killed a visiting rattlesnake at the back door on the seventh....have a desert refrigerator that is as much appreciated as the electric ones at Casa Grande....very often people want to know if it was the Indians who carved their initials on the timbers of the dwelling....Now, people want to know if the Indians put the fence around the ruin, what next?

Enjoyed a visit with Dale King, who came by on the eighth and brought oil, tires and tubes.....Certainly am pleased to go down the road without fear of a blow-out at every pebble.... The solitude with the unforgettable moonlight nights here, are something to write home about.....the other morning this ranger was on the back porch about 7:00 a.m., when a loud squeal was heard up the canyon. He stepped on the roof and heard it again, unmistakably a javelina. At the second squeal, two young coyotes came out of the bushes about 100 yards up the canyon. One climbed on a high rock and looked back. After some time they cautiously went back into the bushes, but soon returned. Evidently they had nerve, but not enough to get breakfast.

Have everything down to a routine, house cleaning, cooking, etc.... There are hundreds of quail and dozens of rock squirrels on the monument.for the first couple of weeks, people always left the water running under the big cottonwood tree. The tree was dying. Now, the faucet is turned off tight, the tree is watered regularly, and is doing fine..... It is discouraging to throw away garbage, and five minutes later see it running across the yard in front of a delighted squirrel.....have noticed, especially on Sundays, when ranger is in ruin, cars will come, the people look up and then leave - if the ranger could be in two places at the same time, the people can usually be persuaded to go up.....

On Friday, the 13th, during a high wind, the case for displaying posters fell, and shook several of the display boards loose. This ranger thought that one man was going to make a window in the north side of the house in his hurry to get out.....Also, on the 13th, we had some trouble with the bees in the dwelling.....One can actually see places on the entrance road where people have turned around and gone back - the road was just too rough for them.

This ranger's spare time has been spent in cleaning the dwelling, raking the parking area, rebuilding in part the barbecue pit, lining the

walks near the house with stones, and generally "keeping the place up."

After having the bravery and the audacity of the chaparral cock ballyhooed to us for years, we saw a common ground squirrel chase one of the cocks for 25 yards and then return triumphantly to his fellows..... One reason for the drop in visitors is two wet week-ends.....Wish we had several more months with the Service, so that we could substantially raise the field trips, museum lectures, etc. Anyway, we have really enjoyed our two months with the Park Service and the monthly reports, but our appointment will be up before the next report, so au revoir and good luck to you all.

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Irving's first season with us has been very satisfactory from our standpoint and seems to have been a very pleasant time for him. We hope we will be seeing you again next summer, Irving.

We plan for Tommy Onstott to take over for a time at Tonto until other arrangements can be made. The sooner we get this monument under a year-round custodian, the better. It has too many visitors and is so open to serious vandalism; we must protect it throughout the year. - F.P.

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AZTEC RUINS

By T. C. Miller, Custodian

GENERAL

August has been a very busy and satisfactory month, with heavy travel and fine weather. While our hours have been quite long, we have been so busy that the time has certainly gone by in a hurry. We reached an all-time high record this month in the way of travel. It is believed that the closing of Wolf Creek Pass has no doubt affected our travel to some extent; however, we have had all the visitors that we could handle with the present personnel. The approach road has remained in good shape all the month, with some maintenance performed by the State Highway Department. We have been advised that our approach road will be graveled early in September. Our road bed is in excellent shape for graveling.

The custodian made a trip to Yucca House National Monument on July 28. The purpose of the trip was to take Roving Ranger Brewer some lumber and wire. The lumber was to be used in building a stile over the fence and the wire is to be used in closing both the north and south gates to the monument. This should eliminate the stock altogether as our trouble in the past has been that the visitors leave the gates open, then the stock could come in or out at will. I had planned to make another inspection trip up there just to see how good our Roving Ranger is at work

AZTEC RUINS (CONT.)

of art with saw, hammer, lumber, nails and barbed wire, but have been too busy handling visitors. I found where some driver had been stuck in the mud for several hours and was informed by Mr. Ismay that it was Jimmy, and all this excavating had been done on July 27 in order to get the Dodge out of the mud hole.

Two trips were made to Chaco during the month. The first trip was on July 31, then again on the evening of the 18th. I had to take Tommy Onstott down there to get the dump truck to send to headquarters to get the museum cases. Spent the night in Chaco and motored to Gallup on the 19th with Naturalist King, Custodian McKinney and Onstott who drove the dump truck. In Gallup Custodian Budlong met us and we had a joint meeting with the Gallup Chamber of Commerce to discuss the placing of monument exhibits at the Indian Ceremonial held at Gallup Aug. 25, 26, and 27. It was decided that each custodian would bring in a display, then Naturalist King would take full responsibility of all exhibits for the three days mentioned above. The materials from this monument will be transported to Gallup on the 24th.

WEATHER STATISTICS

Maximum for the month was 96 on July 24 and August 10. Minimum was 46 on August 11. Precipitation .81 inch was recorded for the month. The greatest amount recorded in 24 hours was .28 on the 4th. Clear days, 15; partly cloudy days, 10; cloudy days, seven.

NATIONAL PARK SERVICE OFFICERS

Kenneth G. Disher, Washington, D. C., and Roving Ranger Brewer of Hovenweep and Yucca House National Monuments were monument visitors on July 29. Ranger Onstott, Canyon de Chelly National Monument, was here August 18 and 23.

PERSONNEL

Herbert Summerfield Day entered on duty as ranger-archeologist August 2. That seemed like quite a long handle for a ranger and he suggested that we could just call him Pete. Pete arrived in time to help handle the largest crowds ever handled in this monument, and I can say that he has certainly made a good hand.

MUSEUM

On August 18 we received five new cases for our museum; on the 23rd we received three cases and all the glass. We are proud of these cases and it is hoped that we can find time to install our artifacts within the next few days, as it will greatly simplify the handling of visitors problem, when our museum unit has been completed.

TRAVEL

3,056 people entered the monument in 737 automobiles, coming from every state in the Union, except Maryland and West Virginia. The above number of visitors were contacted and guided through the ruins and museum in 339 parties. Average time for field trips 44.6 minutes. Average museum trips 19.4 minutes.

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We welcome another new man to our organization in the person of Pete Day.

Mr. Day has been connected with E.C.W. work for the Park Service in the East and so is not entirely new to Service policies in his new position with the Southwestern Monuments. Here's hoping you make the grade, Pete, and I don't know a better man to start you with than the one you have.- F.P.

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TUMACACORI

By Louis R. Caywood, Custodian

During the month 1,009 visitors were contacted on trips through the mission, while 70 additional used the monument facilities, making a total of 1,079 visitors. Rainy weather probably reduced the count somewhat and cloudy afternoons made many short trips. During such dark days poor visibility in the mission is not conducive to long visits. Many people feel oppressed by the gloomy interior and will not even enter.

A number of National Park Service officials visited the monument during the past month. J. H. Tovrea, assistant engineer, and Clinton Rose, resident landscape architect, were here July 26 in regard to the well and other monument improvements.

August 7 brought Lyle Bennett, **associate architect**, Santa Fe, New Mexico, and Frederick D. Nichols, junior architect, Washington, D. C. Mr. Nichols is the Federal building inspector for the construction of the Tumacacori Museum and Administration Building. In addition Mr. Nichols plans to do work in Arizona on the Historic American Building Survey.

On August 10 Frank Fish, custodian of Chiricahua National Monument, and Bill Stevenson, project superintendent of the CCC there, dropped in looking for an ice box. We gave them the Electrolux from the ranger's quarters and had them help us install the Westinghouse in its place. Mechanic Stonehocker from Headquarters brought a Kelvinator and took the Electrolux from the custodian's quarters to be sent to Budlong at El Morro.

TUMACACORI (CONT.)

August 13 I accompanied Frederick Eastman, Charles Maguire and Frederick Nichols on a HABS tour of historic sites in Santa Cruz County. We visited Calabasas, Guevavi, Fort Crittenden and Babacomari Ranch. The boys plan to measure and sketch a number of early historic sites in Arizona.

J. H. Tovrea made a second visit on August 20 to inspect the preliminary work on the museum building and pass on some problems.

Luis Gastellum spent a couple of hours on Sunday morning, August 22, "chewing the fat".

Noteworthy visitors during the month included Mr. F. W. Taylor on August 7. With him came Dr. F. L. Robbins and daughter Gene. Dr. Robbins is a member of the Mayo Clinic in Rochester, Minn. Mr. Taylor was formerly president of the Tucson Chamber of Commerce and was active in raising money for repairing the mission in early days. He said that he first visited the mission when one could enter the church by way of treasure hunters' tunnels through the walls. Mr. Taylor promised some old pictures of the mission.

Dr. E. D. Ball and Dr. H. M. Harris of the Agricultural College of the University of Arizona were here August 15 with their wives.

July was reported as extremely dry with no rain. The range cattle were beginning to suffer from lack of feed and the drying up of water holes. August has been the reverse with many rains and floods. The hardest rain at the monument came on August 12 with large hailstones which beat the leaves off the trees. Weather reports show that during August, 1936, Nogales had 4.45 inches of rain. During August, 1937, there has been over seven inches with still a week to go in this month. The rains have been almost daily with hard driving thunder showers in the afternoon and sometimes at night drenching downpours with no wind.

During some of the severe winds which accompanied the rain storms two large branches were blown from the umbrella trees. Jim trimmed off the broken wood of one break and tried some tree surgery. It looks very good and if it heals properly will be a first-class job.

And with the rains comes the rapid growth of the weed population. The favorite sport here now is weed chopping and we all take an active part. We are thankful that the museum and administration building will cover some very fertile ground and reduce the weed growing area of the monument. We are in favor of more and larger buildings. Mr. Boundey said that it took him three years to rid the monument grounds of tumble wees. Now the sand burr or puncture weed is the chief culprit.

During the excavation for the foundations of the museum very little has turned up in the way of archeological 'finds'. A few pieces of

copper plate and some pieces of broken pottery were uncovered. A number of early foundations going back to Spanish times were cut through. An Indian hearth was found almost four feet below the ground level and below the stratum bearing Spanish remains.

After the rains a number of arrow points have been found and some time ago an interesting religious medal was found. When discovered, the medal was covered with a patina of lime and sand. The sand had become incrustated with a copper corrosion from the medal and was extremely hard to remove. It is of brass and seems to have been stamped from dies similar to the way coins are made today. It is oval and measures 1-1/8 inches in height and one inch in width. It has a cameo-like design on either side. On the obverse side is a highly raised likeness of Santo Wencelaus, patron saint of the Bohemians. He was king of Bohemia from 1378 to his death in 1419, succeeding his father, Charles IV. He was also Emperor of the Holy Roman Empire from 1378 to 1400. He is shown crowned and in heavy armor with a flag on a staff over his left shoulder. On the reverse side is quite the opposite with a full length figure of Santo Isidro or Saint Isidorus, patron saint of the farmer or laborer. He was born about 560 and died in 636. Around his head is a halo and in his right hand the staff. In his left hand is a sheaf of wheat. He is dressed in a belted tunic falling almost to his knees and on his feet there is high top foot-gear. Behind him is a pastoral scene showing a field of wheat, a man driving what looks like a pair of oxen plowing and in the background are mountains. Such a find will make an interesting museum piece.

I am enclosing some notes on archeology and history which may be of interest to include in the Supplement. It might be well to call them "Randon Notes from Tumacacori" to be continued from time to time when new bits of interest turn up.

The Mountain States Telephone & Telegraph Company has recently been putting on the covers of its directories drawings of Tumacacori and San Xavier missions. The Tucson directory has had two views of San Xavier and the Nogales directory two views of Tumacacori. The 1935-36 edition of each directory had one drawing and the winter 1937 has another.

Changes at the monument include the closing of the main gate for entrance to the grounds on foot and the routing of visitors so that there is no interference by them of the construction of the new building. They may now view the construction but cannot gain entrance to any of the work. Following Mr. Richey's suggestion, the restroom signs have been placed nearer the ground. Jim took out the posts, tarred them heavily and replaced them so that the signs are about 18 inches from the ground. Also the front gates were given a coat of linseed oil which makes them look like new again.

TUMACACORI (CONT.)

This is an interesting report and we are glad to note that the new administration building and museum construction is at last under way. We trust the rains will be kind enough to ease off now and let the contractor push his work.

We are glad to get the notes for the Supplement, Louis, and will look forward to more in future months. - F.P.

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BANDELIER

By C. G. Harkins, Custodian

WEATHER AND ROADS

Our weather has been hot and dry all month, with the exception of a few light showers; the roads have been holding up fairly good, but are getting quite dusty the last few days. This is especially noticeable from Pojaque to the Detached Section. A chart of weather statistics follows:

Maximum -----	94	Aug. 10
Minimum -----	52	Aug. 16
Mean Maximum -----	88	
Mean Minimum -----	59	
Mean -----	73.69	
Range -----	28	
Days Clear -----	18	
Days Cloudy -----	5	
Days Partly Cloudy -----	8	
Precipitation -----	.67	

VISITORS

This month has been one of the best from a visitor standpoint. We had 3,825 visitors arriving in 1,018 cars from 44 states and six foreign countries; Washington, D.C., had 17 representatives. The six highest states by visitor count are as follows:

New Mexico -----	1,399
Texas -----	829
Oklahoma -----	517
Kansas -----	206
Missouri -----	104
California -----	93

219 trips were made through the ruins averaging 8.16 persons to the trip, and 84.17 minutes to the group; we have tried to give a little longer service per trip and to keep the number in each party around eight to 12, as the larger parties do not seem to derive as much from a trip

BANDELIER (CONT.)

as the smaller ones.

The trails are quite dusty, and some means of eliminating the dust should be worked out before another travel season. If we should be favored with a few good rains, this source of trouble would be over with for the time being.

The recent opening of the highway over the Jemez Mountains has had a tendency to increase our visitor count, but most of the visitors going through on that route drive in and look around and then go out without making a ruins trip. They are all contacted and talked to. On the other hand, we have a lot of picnic parties over Sunday who do not take a ruins trip. Our camp ground has been full nearly every Sunday. This month shows we have given ruins trips to 49.8% of the total visitors arriving at the monument.

Travel for this year is as follows:

This month -----	3,825
Total for the year -----	7,011
Travel to date -----	10,836

NEWSWORTHY VISITORS

July 25 - Madam Esther M. Dunchevesky, Sofia, Bulgaria.

July 27 - Mr. and Mrs. H. Waha, U. S. Forest Service, Albuquerque, New Mexico; Mrs. Elizabeth Pitt, U. S. Forest Service, Washington, D.C.; Mrs. Pitt is a former Park Service employee. This party made a short ruins trip as Mrs. Pitt was hurrying back to Washington by plane.

July 28 - Captain and Mrs. C. F. Burbank, Washington, D. C.

Aug. 9 - Mr. Frank Waldron, State land commissioner, and party of seven spent a few hours in the camp ground.

Aug. 8 - Juan Gonzales and Rainbird Gonzales. They worked here in the canyon when the present lodge was constructed, and again in 1909 with Dr. Edgar Lee Hewett when he excavated Teyoni. Prof. and Mrs. Ray Hagerty, Chillocco, Oklahoma, Indian School.

Aug. 16 - Mrs. E. B. Butts of Round Mountain, Nevada, a personal friend of E. Z. Vogt, former custodian of El Morro National Monument.

CCC VISITORS

July 27 - Lyle E. Bennett, Associate Architect, Santa Fe, N. Mex.; Charles A. Richey, assistant regional landscape architect, Santa Fe.

BANDELIER (CONT.)

Aug. 8 - Miss Dorothy Fisher and Tom Conley, Santa Fe, N. Mex.

Aug. 5 - Mr. and Mrs. A. Stockman, CCC Inspector.

NATIONAL PARK SERVICE VISITORS

July 27 - Mr. Carpenter, San Francisco Office.

July 28 - H. S. Day, Washington, D. C.

Aug. 2 - Kenneth B. Disher, associate museum expert, Washington, DC.

Aug. 20 - Dale S. King, park naturalist, Southwestern Monuments.

NATURE NOTES

The beaver in the lower canyon have shown very little activity recently. Whether they have left or not is unknown, but no new cuttings are in evidence.

Deer and turkey sign are very plentiful in the upper canyon along the trail and down as far as the Ceremonial Cave.

MUSEUM

No accurate count of museum visitors has been kept this month due to the fact we were working in there finishing up some of the models. Beginning the 24th a regular visitor trip chart will be taken. Two more cases are expected any day. This will give us one room and two additional cases in the second room. Mr. Kenneth B. Disher, associate museum expert, from Washington, D. C., spent a few hours here August 2 going over the museum setup. Visitors so far have been very complimentary on the exhibits. Some spent 20 to 30 minutes in the museum while others only take a look and walk out.

RUINS REPAIR

The big kiva is nearly finished except for the clean-up and by September 15 it should be completed. Mr. Hendron is getting out a complete report on the project. A copy will be forwarded to your office.

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This is a good report from Bandelier and we are glad to see the nice increase in visitors where a man is as well equipped to handle them as Cy is. This monument has not yet come into its own in the matter of attendance and we haven't much idea where the visitor curve is going when it really starts upward. - F.P.

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BANDELIER CCC

By H. B. Chase, Project Sup't.

The garage unit of the hotel area development has been completed to parapet wall height. All vigas and roof sheathing is now in place and upon completion of the doors and mopping on the roof the unit will be completed.

Unit No. 1, dining room and kitchen of the hotel development, has progressed through the month to the point of interior finish. All kitchen cabinets have been constructed and in place, interior plastering completed and bench work of the doors and interior finish ready for installation. At the present time the flagstone floor of the unit is being placed.

The connecting of the water intake outlet with the canyon water main was completed this month, allowing the water intake project to function 100 per cent. A more adequate supply of water has been observed since connecting with the new unit.

The sanitary sewer project, throughout the hotel development area and connecting with the main line sewer, was started this month and constructed to 90 percent of completion. There remains one small line to be connected with Manhole No. 2.

The pipe line project, instigated for the water supply for the entire hotel development area, was started this month and the portion of the line running through the development proper is now in place, complete with all fittings. This project will continue up the canyon side with a feeder line and return line to a proposed 20,000 gallon water storage tank.

The gasoline tank and fittings has been installed in the gas and oil house unit, together with miscellaneous items, oil drum rack, shelves, and other service station apparatus, which leaves only the doors and windows to hang, making the gas and oil house a 100 percent complete project.

A crew has been in the forest all month felling timber for future viga and lintel requirements in the hotel development. The Soil Erosion Service offered the opportunity of securing this material from the Ramon Vigil Grant and was readily accepted by this camp.

A rocky quarry crew has been in progress all month, principally quarrying and shaping a particular type of stone used in the construction of flagstone floors .

Considerable time has been expended by Skilled Workmen Gardner (Electrician) with the aid of a small crew, in hooking up and completing the installation of our intercommunicating telephone system. A small amount of work yet remains to make this project 100 percent complete.

BANDELIER CCC (CONT.)

The final finishing work of stone walls, thus far set up and approved in the hotel development area, completed this project 100 percent until such a time additional plans have been received for the continuation of this project in conjunction with the entire development.

There has been a crew at work the entire month on the large kiva, under the ruins repair project, thoroughly cleaning the floor and building up the retaining walls high enough to eliminate water draining into the structure. Screening of the fill for artifacts has been finished and the work on this kiva is almost completed.

*****OOO*****

BANDELIER FORESTRY

By James T. Fulton, Forestry Foreman

GENERAL FOREST FIRE SITUATION

No fires have occurred this past month nor are we likely to be troubled with fires again until next summer. Fall rains and snows beginning in September will be certain to accomplish that.

INSECT CONTROL PROGRAM

This year, it was unnecessary to spray for the control of Web Worm here in Frijoles Canyon. No doubt the infestation has reached the end of its cycle and will not return again for some years. There were a few webs, but defoliation was practically nil.

MISCELLANEOUS

All this month I have had a crew of men engaged in cutting lintel and viga material on the Ramon Vigil Grant. In another two or three weeks I will have completed the work and can write a full account of the work in next month's report.

*****OOO*****

WALNUT CANYON

By Paul Beaubien, Jr. Park Archeologist

2,086 visitors were contacted, and 504 registered without being contacted. The increase over previous years may be attributed to less rain during the rainy season. The first August I was here, 1934, there was rain every day but two. Last year in August, I had to extricate several cars from mud-holes along the entrance roads. This year the roads have been in excellent condition.

Park Service visitors were Erik Reed, Carl Schmidt, Tommy Onstott, Ken Disher, Dale King and David Jones. Davy had only been here a few days before he could give any number of reasons why Wupatki was the

WALNUT CANYON (CONT.)

finest monument in the world.

I understand that the monthly report should record the happenings of a monument. In endeavoring to meet as many of the parties as possible each day, and cleaning up after them, there isn't much time for other happenings. Have received word that three new pickups have been shipped to Flagstaff from Detroit, August 20. If I get to keep one of them, I'll be able to record the first real happening that has occurred here in years.

Have received four pottery vessels from headquarters. Said vessels, with some Hopi corn, a Hopi basket and a Hopi rug, are being displayed on a card table in the office. I hope to secure one of the glass-topped display cases from the Casa Grande museum.

Several more steps have crumbled on the trail this month. The trail is still passable, so I'll wait till traffic declines before repairing with cement.

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In the mail today we have a card telling us a carload of cars has arrived in Flagstaff so we take it Paul will have something to report next month. He and Davy and Milt Wetherill are each scheduled for a new light truck.

Also we have one of those display cases from Casa Grande marked for Walnut and the first time we get a chance, will send it up.

So things are coming your way at last, Paul.

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CAPULIN MOUNTAIN

By Homer J. Farr, Custodian

My August report for Capulin Mountain National Monument shows we have had 7,000 visitors this month. Distribution of visitors from states appears to be whipping right back as in years before. I would say my check this month shows 60 percent from Texas, 20 percent from Oklahoma, ten percent from Kansas, and the balance fairly equally divided from half a dozen other states like Tennessee, Arkansas, Illinois, Colorado, Louisiana and a few from foreign lands.

Weather has been extra good to us all this month with a few light showers and real cool nights. As a whole this month has come through with the usual moisture and conditions in general are getting much better.

It has been repeatedly reported here that just a few miles east

CAPULIN MOUNTAIN (CONT.)

all month has been extra dry and hot and in fact shows almost a complete desert for about 200 miles east beginning just within ten miles of this monument.

All flora has put on a glad array this summer at our monument and during my 30 years of observation of this volcano I have never before witnessed more abundance in grass and flowers. Our squirrels are back with us again in numbers as in years before the drouth. I have not seen any deer this month but I see their foot-prints in the road every few days; I believe we now have about ten or 12.

We will have Mr. Wirt and Mr. Borell with us next Sunday studying the possibility of porcupine control for this monument. In my opinion these little animals do a great deal of damage to our trees and their activities should by all means be sharply curtailed. However, Mr. Wirt and Mr. Borell have had a decidedly different view of the matter. The porcupine is one proud, arrogant and stuckup son-of-a-gun. I have no use for it whatever, for after witnessing the damage he has done to our scarce and valuable young growing trees I feel that his tribe should be partly eliminated from this monument.

On Wednesday, August 11, I had the pleasure of making a lecture on this volcano before the Kiwanis Club of Raton. Raton has in the past been keenly appreciative of this volcano and its good businessmen have sent many visitors, some 70 miles off their route, to visit this monument, and I feel this little lecture will warm the friendship and good fellowship their city has had for our monument over again.

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Again we would like to point out that porcupine damage at Capulin is a little worse than the same amount of damage on the average flat or rolling ground. Capulin Mountain stands at about a sixty percent angle and when you kill a dozen trees on that slope you can see them a dozen miles as you come across the flat country to the foot of the volcano. This is why we have helped Homer all we can in his porcupine protest.-F.P.

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CHACO CANYON

By Lewis T. McKinney, Custodian

Things have been pretty busy at Chaco this month. The University of New Mexico and the School of American Research at their digs and repair work have kept me pretty busy along with keeping the stock out of the monument, the gates closed, and contacting visitors which have been coming in steadily the entire month.

1,313 visitors entered the monument this month in 479 automobiles, from 31 states, Washington, D. C., Canada and Hawaii.

CHACO CANYON (CONT.)

Cal Miller and his new ranger, H. Summerfield Day, were over on July 31 to see what a pueblo ruin looks like. Ranger Tom Onstott from the "Johnwill Faris" National Monument was over four times during the month. He can't stay away. Kenneth B. Disher, Museum Division, National Park Service, Washington, D. C., was out to look over our blacksmith shop and give us a few points. He couldn't find the museum.

The Prairie Trek Expedition, composed of boys from eastern states and headed by H. S. Howie, were overnite visitors on July 26.

On August 8 Dr. Byron Cummings returned to the Chaco with a group of 17 students from the University of Arizona. Rev. Victor R. Stoner, president of the Arizona Archeological and Historical Society, accompanied Dean Cummings.

Evon Z. Vogt, Jr., former ranger at El Morro National Monument, was a visitor on August 10.

Governor Morris, author, was a visitor at the monument, accompanied by Mrs. Morris.

A party of 20 students headed by Dr. Frank C. Spencer arrived at the monument August 16 and spent the two following days studying Chaco archeology.

Dr. W. W. Peters, medical director of the U.S.I.S. Navajo and Hopi areas was here August 19. With him were Lucy Wilcox Adams, director of Navajo education, Dr. Estella Ford Warner, medical director of District No. 8, and Edna A. Gerken, superintendent of public health education Indian Service.

The University of New Mexico has been working this summer on a small house site, just east of the one (Tseh So) excavated last summer; work was commenced August 2 by the general field session of the University. Nearly 40 students, representing some 20 universities and colleges, are in attendance at the four weeks' session. To date a number of kivas and other rooms have been uncovered whose masonry and artifacts indicate the culture period as being late Pueblo II. A considerable number of burials, whole pieces of pottery, fragments of textiles, and dendro-chronological specimens have been recovered. The students (who are divided into lower division, upper division, and research classes) are receiving instruction in such phases of excavation as burial removal, stratigraphy, and room excavation; and also in the various museum techniques of preserving, classifying, recording, etc. Dr. Leslie Spier, of Yale University, has been lecturing on Southwestern ethnology. The advanced students are carrying out special research projects under Dr. Clyde Kluckhohn, of Harvard University, Dr. Florence Hawley, University of New Mexico, and Dr. Donald D. Brand, University of New Mexico.

CHACO CANYON (CONT.)

I will give a report in detail on the work done by the School of American Research in my September report, as I don't have enough stuff as yet. I will also report something on Threatening rock by Dr. and Mrs. Keur.

WEATHER STATISTICS

Maximum temperature -----	99°
Minimum temperature -----	44°
Clear days -----	17
Cloudy days -----	1
Partly cloudy days -----	12
Precipitation -----	.07"

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We think attention should be called to the University of New Mexico Bulletin, whole number 308, published June 15, 1937. It is a preliminary report on the work done on Tseh So, a small house ruin in Chaco Canyon during the summer of 1936 and is written by Donald D. Branch, Florence M. Hawley, Frank C. Hibben, and others. It is from the University of New Mexico Press at Albuquerque.

It is an excellent report, 174 pages with 22 plates, and not only covers the work done in the summer general Field Session of the Department of Anthropology of the University of New Mexico and the School of American Research, but also covers the whole historical, geological and biological background of Chaco Canyon. - F.P.

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NAVAJO

By Milton Wetherill, Park Ranger

August, the anniversary month for Betatakin and the Rainbow Bridge, brought Dean Cummings and his archeology class on his annual trip to the ruins and the Rainbow Bridge. John Wetherill brought Dean Cummings and his party into Betatakin August 9, 1909; from here they went to Ojato and then on to the Rainbow Bridge reaching there August 14, 1909. Dean Cummings was at that time with the University of Utah.

All trails on the monument are in good shape, but they are only a small part of the trails that we have to travel over to get from one section to the other.

Word went out last month that the roads were impassable and for that reason very few visitors to the monument for the month. A truck trail is about all it is now, and a poor one at that. Had one party walk in from Marsh Pass and the last few parties have left their cars this side of the Hogans and walked about two miles into the ruins.

The Rainbow Bridge Expedition will write the final chapter to the 1937 summer work when they leave Marsh Pass on the 22nd.

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GRAN QUIVIRA

By George L. Boundey, Custodian

Visitors for August, 1937. From what I learn from tourists, 40 per cent came this way thru the reports of past visitors.

The older inhabitants call this the hottest summer they have ever experienced in this country, and at times the roads have been very bad and still we have had quite an increase in visitors over other months.

We have always noticed the absence of any house trailers at the ruins. We find that owing to high centers in the desert roads, the people of the surrounding towns advise leaving the trailers behind when visiting Gran Quivira; this undoubtedly discourages some of them but find that many are doing this.

Messrs. Disher, Reed and Russell paid us a short visit late in the evening of the second. I tried to show them the ruins by aid of the headlights on the car but am afraid it was not very satisfactory.

Mr. and Mrs. Kruse of Minneapolis and Miss Cook of Bismark, North Dakota, spent some time at the monument and visited some of the other ruins in the vicinity.

A few showers have saved a portion of the bean crop and has also aided the grass to some extent.

Farmers report many indications of a very early winter. Our heaviest snow last winter was on the 27th of September and by the way the rattlesnakes are coming in to hibernate, believe cold weather is not far away.

Our birds and animals are so used to watering here that even in wet weather they seem to come in just the same. We are beginning to notice quite a few of the northern birds are already drifting south, and some of the birds which have been with us all summer are losing their bright colors.

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Mr. Boundey points out an interesting thing when he says that about 40 per cent of his visitors came to see his monument upon the report of past visitors.

We know this is the case at many of our monuments. We are advertized

by our loving friends, sometimes, at monuments where we want to hold attendance down, to our dismay. Some time ago one of our very good Park Service friends was putting us on the spot for an increasing visitors' curve at one of our poorly protected monuments. We rather jarred him by telling him it was not us but him and people of his type who were responsible for that upward curve. Upon further discussion, it developed that in the year since he had visited that monument he had told at least 15 or 20 friends that if they came through the Southwest they just must see that wonderful out-of-the-way place. It hadn't occurred to him that a lot of other visitors were doing the same thing and the visitor curve was rising and raising problems for us because of it.

We had a pleasant little visit later on with Mr. and Mrs. Kruse and Miss Cook at Headquarters where Assistant Superintendent Miller showed them around between six and nine o'clock in the evening. They were loud in praise of their treatment at Gran Quivira. - F.P.

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PIPE SPRING

By Leonard Heaton, Acting Custodian

Again it is time to gather together the facts and history of the monument, put them on paper, and get them into your office.

To start with I will report the travel for the month which has not been as much as last month, from the standpoint of visitors conducted through the fort; 111 people were given guide service. Though the local travel has been rather heavy, I would estimate that there has been some 350 to 400.

Among the visitors there were Dr. H. E. Gregory, U. S. Geological Survey, Washington, D. C. He came in to start a party to map the country between Kanab, Utah, and Canebeds, Arizona, including the Pipe Spring area. Also E. A. Goldman, Biological Survey, from Washington, D. C., out on rodent control.

I gave two talks this past month, one July 26 to the CCC boys on the monument and what we were trying to do here and asked them to help protect the wildlife and monument. I believe it had some beneficial results. The other talk was at Moccasin, where I gave an illustrated talk on the Southwestern Monuments. About 50 attended at Moccasin.

CCC activities

July 26 I turned four CCC boys back to the camp as I could not keep work outlined for them to do. After keeping another three for two weeks more for cleanup work, I had to let them go also, for I found it impossible to obtain a truck to haul dirt.

PIPE SPRING (CONT.)

According to Superintendent Draper we will not be able to get any material or truck till next month and maybe not then, as he says they are cutting him short on funds.

GENERAL

Since the boys left I have been spending most of my time cleaning up, straightening up the grounds around the fort and camp grounds. I have also been making war on the red ants within the camp grounds and by the fort. Have been using gasoline, pouring about a quart down each hole and then covering it up good with dirt. The result is that all the ants that are within the hole are killed. Have had to apply gas to the hill a second and third time. It gets the ants that were out at the first application.

The weather has been very hot during the day, reaching 112 on two days; the nights have been colder than would be expected with such hot days. We have not had any rain here at the monument the past month, though there have been a lot of storms south and east of us, making water run and doing a lot of good.

NATURE NOTES

The other day I was back on the hill and found that the pinyon nuts were plentiful this year, so our squirrels and chipmunks will have their dens full of nuts this year; I hope that I will be able to gather a lot for myself.

There have not been many snakes or lizards around this summer. I think the reason is that the boys are catching the lizards and sending them home, and killing the snakes for their hides.

The fish are growing very fast and I am beginning to wonder if within the next three or four months I will have to put a night guard to keep the fishermen from catching them. There have been several wanting to catch them now. There are a few fish that are six or more inches long. Come up for fish next spring.

Trees and shrubs, as well as the flowers, have made wonderful growth this summer. Hundreds of Rabbit Brush and Grease Wood came up this year on the northeast corner of the monument. The trees in the camp ground have put on the average of five feet growth. Two more years will see them giving a lot of shade.

There are a few new birds here now; believe they have just come in for water rather than coming from the north. Think I will get my bird traps out this next month and try my luck at banding birds again.

HISTORY

Was told by a Mr. Palmer that his Grandfather Palmer who was a blacksmith in Cedar City, Utah, made some steel arrow points for some Indians in the early days and that the same points were found in the bodies of the three Berry people that were killed by the Indians at Short Creek, Arizona, in the summer of 1868.

There are a lot of cattle buyers in this section now, buying and contracting the steers for fall delivery. They are about a month early and are giving fairly good prices too. The range condition is fair now and we are in hopes that it will get better before fall and winter sets in.

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We are confronted with a new problem at Pipe Spring caused by the location of a new highway line just outside and parallel to our south boundary.

It will cause a restudy of our master plan with the possibility of relocating our residential area in the northeastern corner of the monument.

This will be taken up through the regular channels but is mentioned here as one of the recent developments of major interest. - F.P.

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HEADQUARTERS

BRANCH OF EDUCATION By Park Naturalist Dale S. King

A field trip which is described below occupied the whole of the time of Park Naturalist King after the completion of the July Monthly Report.

Junior Park Archeologist Steen aided with the July report and then hurriedly finished the preliminary installation of Casa Grande exhibits in the new cases. Although far from a completed job, the Casa Grande museum now presents a neater appearance than ever before, and artifacts are arranged in logical order by cultural periods. Eventually the cases must be paneled in, as they now give the impression of having been set carelessly in the room, rather than forming an integral part of the museum. Many graphic exhibits must be worked up before the Casa Grande display attains praiseworthy status. August 24 Steen traveled to Gallup to take charge of the Southwestern Monuments exhibit at the Gallup Ceremonial grounds.

FIELD TRIP BY KING

August 13 Park Naturalist King, accompanied by newly appointed Park Ranger David Jones left Headquarters by car at 8:20 a.m., arriving at Walnut Canyon National Monument at 6:15 p.m.

Wupatki National Monument

August 14 Jones was introduced to his new post, Wupatki National Monument, and immediately fell in love with the place, being impressed with the monument's sprawling size, quantity and excellence of ruins, and, last but not least, the quaint and interesting quarters in two reconstructed rooms of Wupatki Pueblo.

The monument was found to be in spick and span condition, Clyde Peshlakai, Navajo caretaker, apparently having spent an enormous amount of labor repairing roads, picking up loose stone, and polishing up the place in general. No vandalism had occurred during the time Peshlakai was in charge. The Citadel and Wukoki portions of the monument were visited also, and if Davy could possibly remember the Niagara-like flood of San Francisco Mountain archeology and Park Service detail which Beaubien and I poured in his ears he would be one of the best informed new rangers who ever came into the Southwestern Monuments. However, that would be too much to expect from any man.

Baubien transferred to Jones on this trip a large pottery chart, about four by six feet, which had been shipped from the Berkeley Office. It portrays the comparison between Tusayan pottery and that of the region around Zion National Park. Although too complicated for most visitors, it will form a valuable display for Wupatki when the Zion data is replaced by that of the Wupatki phase of the Tusayan province.

Sunset Crater National Monument

This monument was also visited August 14 and its chronic condition found still to be in effect--visitors swarming all over the place wondering what the monument was all about. More than 20 visitors were met during the 15 minutes our car stopped there. The wooden signs installed last year give a certain modicum of information, but some sort of a way-side shrine must be experimented with in an attempt to satisfy visitor curiosity until such a time as a permanent resident ranger geologist can be stationed there. Sunset attracts as many, perhaps more, visitors than Walnut Canyon--somewhere in the neighborhood of 11,000 a year. It is extremely interesting geologically, and, hooked up with Wupatki and Walnut, helps form one of the most absorbing ecological and archeological one-day trips I know. These three monuments through unavoidable circumstance have lagged behind in general improvement, but they must receive attention soon. Sunset Crater at the present is not a monument of which Southwesterners can be proud.

BRANCH OF EDUCATION (CONT.)

Walnut Canyon National Monument

Junior Park Archeologist Beaubien was found somewhat submerged by visitors but busy with plans for permanent improvement of his monument, particularly if fiscal arrangements make it possible for him to remain there on a 12-month basis.

Shortage of book funds curtails expansion of Walnut's official library (as it does for every other monument also) but Beaubien has made many excellent additions to his personal library along the lines of natural history and anthropology. He is gradually accumulating a small museum exhibit by supplementing his almost non-existent government material with some prize personal Hopi handicraft. Several of the old Casa Grande cases can be used to good advantage at this monument if we are sure Beaubien will be there for protection in winter months.

Walnut's road entrance signs can now be said to be seriously defective in design. The westernmost is completely lost in a brilliant maze of gasoline station and cottage camp billboards and must be made much larger and more striking to obtain any attention whatsoever. The eastern sign has no competing structures to divert attention of travelers, but the iron support on top so discolors the lettering that it is practically invisible. Since painting even once a week would be ineffective, a new scheme is being worked out at Headquarters, and we shall, attempt to salvage what theoretically should be attractive entrance markers.

August 15 I left Gallup by train at 11:30 a.m., arriving at Gallup at 6 p.m. I was met by Custodian McKinney of Chaco Canyon the next morning and talked with Messrs. Woodward and Van Devanter of the Gallup Chamber of Commerce about the monument Ceremonial exhibit and the proposed monument area west of Gallup, respectively. We then drove to Chaco, 11:30 a.m. to 2:30 p.m., spending the rest of that day looking over various changes at that monument.

Chaco Canyon National Monument

August 17 and 18 were spent at this monument.

School of American Research excavation on Talus Unit No. 1 had practically stopped and some stabilization work had been done. Although the repair work contemplated may take care of this small ruin through the winter it is my feeling that much work is immediately necessary on Chettro Kettle. The west court kiva is in terrible shape with water from every ra in washing out walls and floor features and the "Great Sanctuary" is almost as bad. Custodian McKinney was given instructions to contact the School to see if these badly needed projects cannot be accomplished before the end of the field session.

Visits were made also to the General Session of the University of
SOUTHWESTERN MONUMENTS

BRANCH OF EDUCATION (CONT.)

New Mexico's dig near Tseh So, to Wijiji, and to Shabikeschee Village. Near the latter place it was painful to see perfectly good pueblo ruins and pithouses washing rapidly into arroyos. A special report will be made of this under separate cover.

It was especially pleasant at various times during my Chaco stay to meet and talk with Drs. Brand, Fisher, Hawley, Kluckhohn, Spier and others of the University of New Mexico staff.

Custodian McKinney has moved his small collection of artifacts from a reconstructed room in Pueblo Bonito to the old blacksmith shop back of his quarters. This move I thoroughly approve because (1) three times as much space is available, allowing a much neater arrangement of artifacts; (2) light is much better; (3) the custodian has better control of visitors for he can see them from his desk and intercept them before they reach Pueblo Bonito as was the former case; (4) the collection is less liable to theft, being nearer the residence; and (5) circulation of visitors is improved by having the museum near the start and finish of their trip.

Fencing of the Chaco has resulted in a very noticeable improvement of vegetation within the boundaries and Soil Conservation planting in the arroyo itself is coming along very nicely. However, some 70,000 exotic tamarisk cuttings were planted by the SCS. It may be possible to have these removed by the SCS and used in plantings elsewhere, for the native willows are proving just as efficient in controlling erosion. If such work is done this year or next, the project will not be very large, but three or four years growth will so thoroughly establish tamarisk in the Chaco that it will be ineradicable without the expenditure of huge sums of money.

Mobile Unit

Foreman Robert Harris' crew of 19 men established a neat camp, hidden as well as structures can be hidden in the barren Chaco, and have done excellent work in augmenting water supplies and gathering building stone. Instructions were given for Harris to start excavating in Pueblo Bonito the dirt-filled corners which occur when a round kiva was built in a rectangular room. These corners were, of course, excavated by the National Geographic expedition of 1921-6, but were backfilled and have since caused much damage to kiva walls. They were capped poorly with concrete which cracked and allowed moisture into the earth column, and hence out through the kiva wall, completely deteriorating the softer sandstone masonry.

When the ground level in these corners is taken down to that of the kiva floor, walls will be capped and masonry repaired. Experience has proven this the only practical solution of the difficulty.

BRANCH OF EDUCATION (CONT.)

Foreman Harris and Junior Archeologist Steen, who went to Chaco August 28 to aid in supervision until the appointment of an archeologist foreman, will also remove all cement capping on Bonito, for this capping proved to be a detrimental rather than a beneficial measure. Re-excavation of kiva corners and recapping by a new method will occupy the crew's time for several months.

The morning of August 19 I met with Custodians McKinney, Miller, and Budlong and Ranger Onstott in Gallup concerning the monument exhibit for the Gallup Ceremonial. At 5:30 p.m. I left by train for Santa Fe, being met there at midnight by Custodian Harkins who took me by car to Bandelier where I arrived at 1:30 a.m., August 20.

Bandelier National Monument

August 20, 21 and 22 were spent at Bandelier. The CCC ruins stabilization crew under Foreman J. W. Hendron has done a fine job on the big kiva of Tyuonyi. The stabilization work is authentically done and the kiva should hold for some time with no further work. Interesting was the discovery during the work of two viga sets with the original charred viga ends in place. These may furnish a dendrochronological date. In cleaning the badly deteriorated floor upright stones were seen which proved to be sub-floor cists antedating the kiva, according to Hendron. His report will cover these features at a future date.

The Bandelier work has been confined, as I hope all Southwestern Monuments ruins repair work will be, solely to stabilization, with no reconstruction unless absolutely necessary; i.e., to keep an old wall from falling. Hendron's crew will now repair the roofs of the Talus House, Ceremonial Cave kiva, and one other roof of buildings reconstructed by the University of New Mexico and School of American Research in past years. He will then start bracing walls of Tyuonyi ruin.

Bandelier's museum installation still limps, although Custodian Harkins has effected the placement of available displays in the first room so that many visitors receive 15 minutes or so of museum contact. Other displays are being shipped from the Western Museum Laboratories at Berkeley, but there is so much to do that a Headquarters Naturalist must be sent to Bandelier for an extended period in the near future, certainly before the next summer season.

August 23 I left Lamy at 11:30 a.m. and arrived at Gallup at 5 p.m.

Gallup Ceremonial Exhibit

August 24 was spent in assisting Custodians McKinney, Miller and Faris in installing an exhibit at the Gallup Ceremonial grounds. It consisted of six booths: two for Chaco artifacts, maps, and photographs; one for Aztec Ruins artifacts and photographs; one for paintings of

BRANCH OF EDUCATION (CONT.)

Canyon de Chelly very kindly loaned by Artist Leigh; one for a mileage map of the Southwest and to provide a place for distribution of information circulars by the attendant; and one for the northeastern Arizona pottery chart which was borrowed from Wupatki for the occasion. Although very hurried in conception and hit-and-miss in execution, the exhibit I thought to be satisfactory. If such a step is taken again next year I hope we shall have the opportunity to plan and prepare carefully for it. There is a chance at the Ceremonial for the National Park Service to reach thousands of really interested visitors and to reach them in very economical fashion. I think the attendants at the booths will agree that many visitors almost intensely desired information about the monuments and other tourist attractions of the southwest and were greatly pleased at finding a place where such information was available.

I was relieved by Archeologist Steen and left Gallup by car August 26 at 11:30 a.m., reaching Flagstaff at 6 p.m. I left Flagstaff August 27 at 10:35 a.m. and arrived at Headquarters at 5:45 p.m.

BOTANICAL COLLECTION IN RAINBOW BRIDGE AREA

Hugh Cutler of Milwaukee, Wisc., in July collected *Tradescantias* and a few root tips and anthers in fixative to use in chromosome counts. This work was done around Rainbow Bridge National Monument with permission of Superintendent Frank Pinkley. Cutler will furnish us identified lists and other printed lists in the near future.

REPORT OF THE HEADQUARTERS LIBRARY

By Gertrude F. Hill, Student Technician

From July 28 to August 28, work was confined primarily to the cataloging of geological, botanical, and zoological materials in the library. During the early part of August the writer assisted with the assembling of the Monthly Report, prepared two order lists of archeological publications for the custodian at Casa Grande, and handled several miscellaneous bits of reference work for outsiders and for personnel of various monuments.

That once out of the way, our main project involved the cataloging of the library's remaining files of periodicals - The American Anthropologist, The New Mexico Historical Review, El Palacio, The Masterkey, Museum Notes, Natural History, American Antiquity, and others. Plans have been made to type author and subject analytics for the outstanding articles in several of these publications later on when press of duties has lessened somewhat.

Stenographic work consumed a generous portion of the librarian's time this month. Since our apportionment for book purchase is pitifully small, numerous letters were written in quest of free materials which could be utilized in our reference work. Attempts were also made to

BRANCH OF EDUCATION (CONT.)

fill in missing numbers of various publications in the library files, such as Indians at Work, Southwestern Lore, and the Bureau of American Ethnology Annual Reports and Bulletins. Consequently, new material has flowed into the office in an almost steady stream, as indicated by the following record from August 1 to August 28:

Periodicals -----	38
Pamphlets -----	31
Books -----	11
Reprints -----	2

Repairing of our books was greatly facilitated by the acquisition of a new steel table, the mending record showing a marked increase over that for the two months previous.

The writer spent the entire morning of August 16 rearranging the shelves and otherwise making room for the rapidly expanding collection. From the 11 cases occupied last month, the number has increased to 18, with five shelves of uncataloged material, chiefly old reports and other publications not particularly needed at present, awaiting cataloging when time permits.

Summary of activities from July 28 to August 28:

Books cataloged ----- 351

Cards made:

Author ----- 201

Subject ----- 425

Title ----- 107

Joint author and cross

reference ----- 37

Shelf list ----- 636

Total cards made 1,406

Books repaired ----- 58 (this included new covers for many of them)

Letters written ----- 53

Time expended:

Library activities: 182 hours, 55 minutes

Stenographic duties (including work on assembling the Monthly Report): 14 hours, 50 minutes.

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MOBILE UNIT

By Robert S. Harris, Engineering Foreman

The excavation for the pipe line was completed for a total distance of 1,800 feet. The tower for the storage tank was erected and the tank

MOBILE UNIT (CONT.)

placed in position. 900 feet of pipe have been laid, two faucets placed in the camp ground, and connections made to the custodian's residence. The completion of this project awaits the arrival of pipe which has been ordered by the Indian Service.

Six tent houses, size 14 x 16, and one tent house, size 18 x 24, have been erected. These houses are of the portable type and were fabricated by the Indian Service at their mill north of Ft. Defiance.

Approximately 20 cubic yards of stone suitable for ruins repair work have been gathered by sorting thru the dumps of previous excavations.

Excavation of back-fill material in the triangular areas adjacent to kivas situated in rooms was started and 12 cubic yards of material removed.

Official visitors for the month include K. B. Disher, of the Washington Office, National Park Service; Dale S. King, of the Headquarters office; and C. H. Powers, conservation supervisor of the Indian Service.

We are starting a very interesting experiment with this Indian CCC Mobile Unit on stabilization of ruins in the Southwest and we all hope it will work out successfully. If it does, we have years of work ahead for such a crew. As soon as we get some experience in this unique departure from CCC work and learn the size of gang needed and other details, we may take up with you the matter of putting another of these units in the field.

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VISITOR STATISTICS

By the Boss

August is the peak of our year and this one was no exception.

Field Trips

We gave 1,940 guided field trips this month as against 1,648 last month and 2,410 a year ago this month. These trips were attended by 12,259 visitors this August, 8,933 visitors last month and 13,735 a year ago in August. The average party was 6.3 persons staying 51.6 minutes. Last year it was 5.7 persons staying 39.1 minutes.

We haven't had as many field parties this year as last and we haven't had as many visitors in the total number but we gave more time to them this year, 100,239 minutes against 94,286 minutes last year.

Visitor Statistics (Cont.)

Aztec gave 16 more trips than last year to 141 more visitors, had 8.2 persons to the party, exactly the same as last year and the average party was 1.7 minutes longer.

Bandelier gave 17 less trips to 20 less visitors. The average party increased from 8.1 to 8.7 and the time lengthened from 71.3 per trip to 84.7 per trip.

Canyon de Chelly - Increase from 18 to 54 trips, from 69 to 320 persons and the average trip came from 253 minutes down to 143 minutes.

Casa Grande - came down from 270 trips to 219, up from 1,468 visitors to 1,593. The average party came from 5.4 to 7.2 and the average party time from 31.7 to 34.0.

El Morro - Came up from 78 trips to 94, from 408 visitors to 517. The average party fell from 5.9 to 5.5 and the average time went from 65 minutes per trip to 96.8.

Gran Quivira - Had 141 trips last year as against 167 this August. Visitors increased from 730 to 892. Average party increased from 5.1 to 5.3. The average time of party dropped from 58.9 minutes to 55.3 minutes.

Montezuma Castle - Came up from 175 field trips to 261, from 1,064 visitors last year to 1,175. The average party dropped from 6.0 to 4.5 persons and the time dropped from 48 minutes to 29.9 per party.

Tonto - The number of trips increased from 50 to 58, the number of visitors increased from 203 to 226. The average party decreased from 4.0 persons to 3.8. The average time decreased from 72 minutes to 52.5.

Tumacacori - Number of trips increased from 177 to 184. Number of visitors increased from 912 to 1009. The average party increased from 5.1 to 5.4 persons. The trip time increased from 28.2 minutes to 36.8.

Walnut - Number of trips dropped from 186 to 148. Number of visitors rose from 890 to 1009. Average party rose from 4.7 persons to 6.8. Average time dropped from 21.5 to 18.5.

Museum Lectures

We gave 1,094 museum talks in August as against 1,051 in July and 1,117 in August last year. They were given to 6,894 visitors as against 5,518 last month and 7,049 August a year ago. The average party increased to 6.3 from 5.2 last month and 5.9 in August last year. Average museum party time was 19.08 minutes as against 20.8 a year ago and 17.3 last month.

VISITOR STATISTICS (CONT.)

Aztec - Gave 331 museum talks as against 294 a year ago and gave them to 2,954 people as against 2,585 last year. The average party came from 8.7 last year to 8.9 this year. The average time rose from 16.2 to 19.7 minutes.

Casa Grande - Gave 152 talks this year as against 239 last to 1,174 visitors this year against 1,483 last. The average party has come up from 6.2 to 7.7. The averaged time dropped from 24.9 last year to 19.9.

Montezuma - Gave 238 talks this year against 239 last to 1,146 visitors this year against 1,449 last. The average party was 4.8 this year as against 6.0 last year and the average time was 18.1 minutes this year as against 22.4 last.

Tonto - Gave 66 talks this year, 65 last. Had 233 visitors this year against 273 last. Averaged 3.5 per party this year against 4.2 last. The museum party time was 11.1 minutes this August, 11.7 last month and 21.5 a year ago.

Walnut - Gave 148 museum talks as against 261 last year. Had 1,077 visitors as against 772 last year. Averaged 4.5 persons per party against 2.9 last year and had an average trip time of 19.6 minutes as against 20.3 last year.

In General

Out of about 40,000 visitors last month we missed giving our informational service to 26,198, or 65.44%, as nearly as we can check up. The table shows clearly where we missed getting in touch with them; White Sands, Capulin, Sunset and Bandelier account for about 22,500. Give us four more men and we can take out a lot of this slack.

We did make 19,153 'educational contacts' out of 40,000 visitors which compares with 20,996 contacts out of 40,942 visitors last year, so it looks like we are holding our own, but there is plenty of room to expand if we could get a few more men.

It looks like the boys at Aztec worked pretty hard to get 5,753 contacts with two men on the job 2,876 per man. Paul at Walnut Canyon came next with 2,086 per man.

When it comes to time per man, Aztec seems to be in the lead with 10,200 minutes per man. Paul has 7,380 minutes. It is here the lone-post boys show up strong because, being in the back country, their visitors stay much longer; Gran Quivira with 9,249 minutes and Bud at El Morro with 9,100 are examples.

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VISITOR STATISTICS FOR AUGUST, 1937
SOUTHWESTERN MONUMENTS

MONUMENTS	EMPLOYEES		GUIDED TRIPS				MUSEUM LECTURES				Unattended	Total Educational Contacts	Total Travel	Per cent contact	
	Per.	Temp	No.	Att'd	Time	Av. Att'd	Time	Av. Att'd	Time						
Arches															
Aztec	2		339	2799	13872	8.2	331	2954	6530	8.9	19.7	102	5,753	3,056	188
Bandelier	1	3	219	1908	18557	8.7						1,917	1,908	3,825	49
De Chelly	1	2	54	230	7775	4.2						107	230	337	68
Capulin Mt.												7,000		7,000	
Casa Grande	2		219	1593	7445	7.2	152	1174	3025	7.7	19.9	211	2,767	1,804	153
Chaco Canyon	1	1	85	416	7261	4.8	71	310	1621	4.3	22.8	561	726	1,313	55
Chiricahua	1	2	59	303	2553	5.1						774	303	1,077	28
El Morro	1		94	517	9100	5.5						42	517	559	92
Gila Cliff															
Gran Quivira	1		167	892	9249	5.3							892	892	100
Hovenweep															
Montezuma	2		261	1175	7815	4.5	238	1146	4330	4.8	18.1		2,321	1,175	197
Natural Bridges	1														
Navajo		1	22	71	3210	3.2							71	71	100
Organ Pipe															
Pipe Spring	1		31	111	825	3.5						350	111	461	24
Rainbow Bridge															
Saguaro												561		561	
Sunset Crater												1,193		1,193	
Tonto		1	58	226	3049	3.8	66	233	735	3.5	11.1	60	459	296	155
Tumacacori	2		184	1009	6783	5.4						70	1009	1,079	93
Walnut Canyon		1	148	1009	2745	6.8	236	1077	4635	4.5	19.6	504	2086	2,590	80
White Sands		1										12,329		12,329	
Wupatki		1										417		417	
Yucca House															
Headquarters															
TOTALS			1940	12259	100239	6.3	1094	6894	20876	6.3	19.08	26,198	19,153	40,035	34.56

CLOSING

By the Boss

Chief, we have been getting out the estimates this month and that is generally a time for overhauling our plans and getting a bird's-eye view of our job.

We knew, of course, that we were handling over a thousand square miles of reservations, a little over 1,100 square miles in fact, scattered in 26 places in four states.

In checking up for estimate purposes we find we have seven administration buildings, 25 residences and 22 utility buildings. That would make a pretty good layout if you put them all together.

The trouble is we need eight more administration buildings, 16 more residences and 24 more utility buildings.

We have ten water systems and we need 15 more in order to keep our employees as well as the visiting public from drinking bugs, polliwogs, mineral water and so forth.

We have nine sewage disposal systems and we need 16 more before we can look Harry Hommon in the eye and dare him to come in and hunt for trouble from the public health standpoint.

We have 222.62 miles of roads, good, bad and indifferent, mostly the latter, and we need several more miles for proper operation.

We have 123.87 miles of trails in operation and we need several more miles before the system is complete. These trails are not all for the public use, nor are the roads mentioned above; we have several fire problems among these monuments.

With all this investment, you would think we should have a lot of visitors to make the investment worth while, and we have had them. Three hundred thousand visitors in the fiscal year just closed according to the boys who cast up the figures, and that, you will admit, is a lot of people. Whether we like it or not, we are in the big-park class with a lot of these problems of visitors, buildings, roads, trails, and so on. And it doesn't look like the visitor's curve is going to level off in the next ten years, either.

In our dumb way we thought we had an answer. To protect such lovely and intensely interesting places as Canyon de Chelly, Chaco, Navajo, and several other prehistoric monuments, from a too heavy visitation of little interested visitors, we worked pretty hard to have an archaeological reservation made along a transcontinental highway and a transcontinental railroad, near a good-sized town where good facilities were available to the traveling public. The reservation was worthy of preservation from a scientific standpoint and stood on its own feet archaeologically speaking.

CLOSING (CONT.)

but one of the fine angles which appealed to us, was that we could arrange it to stand a heavy visitation with little damage and thus double shoot the turn by showing archeology to more people per year and at the same time relieve the visitor-pressure on several of these gem monuments where it is going to do a lot of damage in the next 20 years if something like this isn't done about it. That particular proposed reservation seems to have fallen through but we still think we had a good idea about making it; something like this will be the final outcome.

Cordially,

Frank Pinkley

Frank Pinkley,
Superintendent.

*****OOO*****

(LAST MINUTE ARRIVALS)

WHITE SANDS CONSTRUCTION

By A. E. Underhill, Road Oiling Foreman

The following report of my activities for the month of August will inform you of the progress of the entrance road at the White Sands and what was accomplished at Zion and Bryce.

The Oak Creek road, camp ground roads, cabin loop, cross roads, residential road, and utility area were all oiled and processed when I left Zion on August 7. The rock crushing plant was moved to Bryce but not set up as the contractors, Hayner & Burn, were waiting to lay plate the White Sands road and it was necessary for me to leave Zion and Bryce to look after the White Sands work.

The grades are now completed at White Sands and the subgrade is in first condition, being hard and well compacted and conforming to the grades established by Mr. Clark.

The end of this week all of the base course of rock will be in place and rolled ready for the blotter coat of asphalt.

The crushing and placing of the wearing surface will then follow as rapidly as possible and I have hopes of having the job completed by the 10th of September.

At the present time I have two checkers on the road and two weigh masters at the crushing plant.

WHITE SANDS CONSTRUCTION (CONT.)

During the month the contractor has completed all subgrade, hauled and processed 10,000 cubic yards of sand and clay and 4,000 cubic yards of crushed rock.

The contractor has scales set up under his hopper and the materials are being weighed in place of truck measurement. There was constructed a cubic yard box and five weights taken to get the average weight per cubic yard. This method of procuring the average weight is taken once a day and the trucks weighed every morning for the tare on each load....

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TUMACACORI MUSEUM

By Frederick D. Nichols, Inspector

(week ending Aug. 14, 1937)

There were several changes on the museum drawings to be checked, and the prices of various materials to be had, so I decided to remain in Tucson until they were completed. Work on the new building was to begin on August 9, but due to the recent rains, it was impossible for them to begin until the following Monday, so I decided to devote the remainder of the week to Historic American Buildings Survey work.

I got in touch with Mr. Maguire and Mr. Eastman and we visited old Fort Lowell first. It was built in the 60s and most of it is in ruins. However, several of the officers' houses are still being lived in. They are very open, simple residences with a sparing amount of Victorian detail. From copies of the original drawings, we could determine the layout of the fort and the original uses of the ruined walls. Measurements of one of the houses, with a general plot plan on the cover sheet and a possible restoration of the hospital would be sufficient with a data book and photographs.

We then spent some time driving through all the old quarter of Tucson and the immediate vicinity and found some very fine things, many of which I photographed. The finest things, which should be measured are: The old priests' house at San Cosme Mission - a fine example of early domestic architecture in Arizona with a moulded brick cornice, plaster walls, a broad portal with solid wood arches and a fine mesquite beam and ocatillo ceiling. The two interior rooms contain handsome ceilings of moulded beams with the ocatillo savinos laid in herring-bone fashion. Across the road are the ruins of the Mission school and a few traces of the church itself, which should be recorded as they are soon to be destroyed.

Another notable residence is on south Fifth Street in Tucson. This is one story adobe plastered, with moulded brick cornices. The facades are enriched with pilasters which have moulded brick capitals. The portal is similar to the above.

On Friday we drove to Tumacacori. We first visited Tubac, a charming old Mexican village which has a remodeled church. We were joined by Mr. Caywood at the mission and proceeded to Calabasas. The ruins of this old mission are most interesting and definitely should be measured. Guevavi was next on our list, and we found it even more ruinous than Calabasas. The day was clear and fine and we were able to get some good pictures and Mr. Caywood added to the mission collection of arrowheads and pottery fragments. The next buildings we saw were Forts Buchanan and Crittenden. Many of the walls were remaining and it was possible to make out the plot plan.

We then drove to the Babacomari Ranch, and photographed an old house, but we were unable to look for an older one as our motor was not functioning properly and we decided to return to Nogales, where the water pump had to be repaired.

There is a noteworthy example of early ranch house construction at the Leon Ranch, just west of Tucson. It seemed advisable to measure it before I left Tucson, so with the assistance of Mr. Maguire and Mr. Eastman this was accomplished, over the week-end.

San Xavier del Bac was also visited. It was most interesting to compare its detail with that of Tumacacori. It is in an excellent state of repair, although somewhat restored, but it is a fine example of early Spanish church building in this country. Nearby, in the Papago village are some examples of wattle-and-daub Indian houses. We took photographs of these.

*****OOO*****

BANDELIER RUINS STABILIZATION

By Jerome W. Hendron

The Bandelier ruins report for last month terminated with a description of the sipapu found almost in the center of the kiva, and mention that the ground plan drawing had been completed in pencil. At this point I wish to backtrack a little regarding the sipapu, since it was removed while searching for the plastered floor level. The slab of tuff as the top is eight inches by six inches, at the bottom it is $8\frac{1}{2}$ inches by $5\frac{1}{2}$ inches on one side and $8\frac{1}{2}$ by six inches on the other. The total length of the slab varies from 10 inches to $11\frac{1}{2}$ inches. In the top side is a hole three inches in diameter and seven inches deep into the stone. It is two inches in diameter at the bottom. Two inches down from the top side on the inside of the hole is a boring $\frac{3}{4}$ of an inch in diameter extending upward in a westerly direction to the outside. Just above this side boring and on the outside is a partially completed boring which was apparently the first attempt.

In order to locate the plastered floor of the kiva a trench had to be run into the north wall. After removing about four inches of debris

BANDELIER RUINS STABILIZATION (CONT.)

a Hard plaster floor was struck having three different hard plastered coats. The coats were no more than one half inch thick altogether; underneath was about nine inches of sand and some mud which might pass as a crude form of plaster. Below this point seems to be the bottom, the material is very hard, large chunks of tuff mixed with riverwash. A thorough cleaning and examination of the floor showed that the plastered coats have entirely disappeared with the exception of a small strip around the wall on the north half of the structure. In no other place was a portion of the floor found.

On August 3 the screening of the fill around the outside of the kiva was completed and actual stabilization work was begun. At this point it may be well to give a brief resume of the situation. It appears that the original builders constructed a high retaining or secondary wall in back of the main inside wall. This wall was approximately ten or 12 feet wide all around and was squared off at the top so that the roof could be layed on. After abandonment of the kiva the roof was either burned or caved in by itself, the inside wall began to crumble, the stones falling to the inside, then the retaining or secondary wall began to fall, that it, with the disintegration of the inside wall the retaining wall had nothing to hold it and being of poorer construction than the inside it would not last long and as the stones fell the wall was turned into a runway or rainfall. Year after year more debris accumulated on the inside, the west entrance and the ventilator shaft on the east crumbled and the entire wall was rounded off making the kiva a catch-all. It was not until the summers of 1908, 1909, and 1910 that the ruins of Frijoles canyon were worked upon by Hewett. In this program an excavation was carried on at the large kiva. Since that time the walls have continued to crumble until the skeleton of the structure would have lasted only a few years longer.

The present project consisted of removing all of the debris from the outside and cutting the wall down to a point where there would be a solid base to tie to in order to set this retaining wall back in place. This meant cutting it down about three feet and screening all of the fill, and stacking all of the rocks in piles away from the job until they were needed.

Reconstruction of the retaining wall or secondary wall was begun about two feet from the inside wall, this gap being left to set the stones in cement, that is, a line of cement to be poured in back of the visible stones of the retaining wall all around the structure. The portion around the outside was layed with chunks of basalt and tuff and filled with the screened dirt and also the gravel removed by the screen. The dirt was wet down as it was filled in because it would form a tighter pack and also because a greater amount of it could be utilized. This process was continued until it was about three feet high all around the outside. The next step was to put the outside or retaining wall in shape so that it would hold the weight of its original height. The joints were brushed out, that is, all of the loose dirt or plaster being removed and replaced with mortar consisting of one part cement, four parts sand and one part screened fill. This mortar

BANDELIER RUINS REPAIR (CONT.)

was forced far back into the cracks and chinked with small chunks of tuff. After it dried the loose and conspicuous portions were cut away.

The laying of the main portion of the wall was then begun, the two feet strip around the inside being layed in with building stones as nearly as possible like the original wall. The ends headed in toward the inside of the kiva and cement mortar was used as a tie for the back ends toward the outside. This was built up a few inches higher than the remaining or back portion of the outside wall previously layed so that drainage would be to the outside. After the cement had set the joints to the inside were cemented, again forcing the mortar far back in so that it would not be too conspicuous. Stabilization of the entire outside wall is complete to date and at this writing the cracks between the building stones are being filled with mud from the screened fill taken from around the outside.

The outside wall has a definite slope to it and it has been packed with fill so that the greater percentage of rain water will run to the outside.

The west entrance to the structure has been set back in place and likewise the ventilator shaft, not as a reconstruction job but as a means to protect the rest of the kiva. These two features if left like they were found would certainly have shortened the life of the structure a good many years.

The question of the height of the retaining wall is one that has been asked several times, and there are three answers to this. First, while cutting down the retaining wall on the north side, two of the viga sets were found and the wall could not have been much higher than the vigas; second, a very large stone stood to the left of the ventilator shaft which appeared to be one of its corners; and third, all of the loose building stones in the fill and to the inside would certainly have revealed its height, of course, leaving out an adequate supply required by the thin inside wall.

Drawings to scale have been worked up in the field showing all of the features of this structure and are now ready for inking.

It looks very much like I will have to complete the report on the kiva next month since there are still a few odds and ends of a trivial nature to clean up.

*****OOO*****

THE Supplement

S-M MONTHLY REPORT

Supplement

THE UNIVERSITY OF CHICAGO

METEOR CRATER, ARIZONA

By Vincent W. Vandiver,
Associate Regional Geologist.

INTRODUCTION

It is the purpose of this report to summarize some of the various theories which have been advanced, during the past 35 years, to account for the origin of Meteor Crater. To outline some of my observations regarding this phenomena of nature which has attracted scientists from all parts of the earth for many years. Efforts to exploit the meteoric mass by commercial interests in which large sums of money have been expended will be noted. Briefly it is proposed to bring up to date our present knowledge of Meteor Crater for the Park Service records and the possible interest for various members of the staff concerned.

The noted Astronomer, Arrhenius, is said to have declared that Meteor Crater is the most fascinating spot on earth. The interesting fields for investigation in this area are incumerable. Facts may be disclosed which to an astronomer might give concrete evidence as to our theories of origin and the building up of our solar system. Should the crater be definitely proven the result of a meteoric impact, the geologist will be interested to have the evidence to be found in the behavior of rocks under sudden stress, not to mention the later effects of chemical reactions underground. From the point of view of the physicist and chemist the various features prove none the less interesting. The average visitor stands in amazement when the great pit is viewed from the rim for the first time.

LOCATION

Meteor Crater is situated in Coconino County, northeastern Arizona, in the southern portion of the Colorado plateau, amid many National Parks and National Monuments which have been reserved for preservation by the Government. The crater may be reached on U. S. Highway No. 66 by traveling 23 miles west of Winsow and thence seven miles southeast. The loop road south to the crater is taken at the Sunshine station on the main highway. The feature is most accessible to transcontinental tourist travel, being located near one of the main highway routes through the Southwest. Stops may be made and visits arranged for at Winslow or Flagstaff situated on the Santa Fe Railroad.

METEORS AND METEORITES

Very few meteors reach the Earth's surface as meteorites and still fewer meteorites give rise to meteoric craters. Meteorites, as is known from studies of those that have been seen to fall, are bodies which before their striking the Earth were pursuing independent orbits around the Sun, usually in an elongated form similar to comets. Their velocity averages

GEOLOGIC REPORT ON METEOR CRATER (CONT.)

around 26 miles per second and with the Earth moving 18 miles per second in its own orbit, the meteorite can strike at any speed from eight miles per second if it overtakes us, to 44 miles per second if it meets us squarely. At even the lesser speed the meteorite is subject to great friction as soon as it enters the Earth's atmosphere, some 80 to 100 miles distant, which heats the surface of the body and the air about its track. Small meteors appear as shooting stars and large ones as fire-balls.

A few of the most important meteoric craters thus far discovered are listed as of possible interest.

The Texas crater is situated about nine miles southwest of Odessa in Ector county. It is a shallow depression, roughly circular in outline, with an average diameter of 530 feet. The steep inner slopes show the limestone dipping 20° to 30° away from the center. Fragments of meteoric iron have been found and some have been located mixed with the limestone and sandstone debris forming the rim. Although this crater is now generally recognized to be of meteoric origin, various suggestions have been made to account for it; namely, - volcanic explosion, salt dome, expansion by hydration of anhydrite, explosion of gas, etc.

The Henbury craters in central Australia are located about seven miles southwest of Henbury, on the Finke river. Much meteoric iron has been collected from this area and within an area of a half square mile 13 craters have been mapped. The largest crater is 220 yards by 120 yards across, and 50 to 60 feet deep. In this area there must have been not a single mass, but a shower of large masses of iron that formed this group.

The Wabar craters, discovered in 1932, are located in Arabia. Two distinct craters have been mapped with the indications of others buried in the sand. The larger of the craters is approximately circular in outline, has a diameter of 100 meters, and a depth of around 10 meters. The rims of the craters appear to be built up mainly by silica-glass. A few pieces of meteoric iron have been collected from the outer slopes of the craters. It has been suggested that the reason for the unique occurrence of silica-glass is no doubt that large masses of iron fell on clean desert sand.

The group of craters in Estonia, 20 kilometers northeast of Arensburg, were first described in 1827. They have been considered as being earth-works made by man, to be the result of gas explosions, oozing out of a bed of clay, weathering of limestone, expansion of anhydrite, but recently detailed borings and trenches undertaken by the Inspector of Mines, has resulted in their being identified with the fall of a shower of iron meteorites. The main crater is occupied by a lake, with a diameter of 92 by 110 meters, and depth of 15.5 meters. The steep inside walls show beds of Silurian dolomite dipping from the center of angles of 30° to 40° .

GEOLOGIC REPORT ON METEOR CRATER (CONT.)

No meteoric iron has been found in the locality and this is explained by the fact that the ground has been tilled since time immemorial.

The Siberian craters are said to be rather disappointing, showing only a series of small pools in a swamp. It is certain that some catastrophic event occurred there on June 30, 1908, but the exact nature remains doubtful. It is stated that a fireball had been seen and that loud explosions were heard over a wide area, blasts of hot air were felt, and earthquakes recorded at several points. Pine trees were felled outwards for a distance of 37 miles from the center. Numerous round depressions have been found in a swamp area but no meteoric iron has been collected, although it is rumored that natives have collected pieces of iron in the central area of the fallen forest.

The Campo del Cielo craters of the Gran Chaco, Argentina, are now considered meteorite craters. Native iron has been known in this district since 1576. Transparent glass has been found. There are no volcanic rocks in the surrounding pampa, and the Andean volcanoes are 500 miles away. One of the craters has a width of 183 feet and a depth of 16 feet.

Direct observation as to how the larger craters are formed seems to be out of the question. Meteorites which have been seen to fall have been comparatively small in size. They make small holes usually only a few feet in depth. The largest meteorite which has been observed to fall is of the stony type, which weighed 820 pounds, and fell near Paragould, Arkansas, in February 1930. This stone penetrated the soil to a depth of only eight feet. The largest known iron meteorite is the Hoba meteorite, discovered protruding from the surface in Southwest Africa in 1920, and weighing 60 tons. It was not seen to fall and there is no sign of a crater in the vicinity.

GEOLOGY

The surface geology of Meteor Crater and vicinity is comparatively simple. The sediments of the surrounding region lie practically horizontal and as the crater is approached, the beds may be seen to dip away from the center in all directions, at angles of from 10° to 80° . One is astounded by standing on the rim and peering into the high crater for the first time. The irregular rim of up-thrown rocks rises over 150 feet above the surrounding plain. The main portion of the rim is more than 1,000 feet in width with scattered remnants of debris as much as six miles from the crater. The floor of the crater is flat and is approximately 1,500 feet across. The elevation at the cabin on the north rim is 5,860 feet above sea level.

The upturned sediments of the rim consist of from 0 to 60 feet of Moenkopi (Triassic) sandstone; around 250 feet of Kaibab (Permian) limestone; and 150 feet of Coconino (Permian) sandstone. From the drill records a total thickness of the Coconino sandstone is given as 660 feet.

GEOLOGIC REPORT ON METEOR CRATER (CONT.)

Below the Coconino sandstone is the Supai formation, also Permian in age, and from records of drill holes and sections in surrounding region it is believed to be around 1,000 feet in thickness. It is also assumed from drill hole records that the Supai was apparently not disturbed by the forces responsible for the crater.. The Redwall limestone, of the Mississippian, underlies the Supai formation. For a generalized stratigraphic section see following:

STRATIGRAPHY OF THE METEOR CRATER AREA

ARIZONA

SYSTEM	SERIES	FORMATION	THICKNESS (FEET)	CHARACTER
CENEZOIC	RECENT AND PLEISTOCENE	LAKE BEDS, ETC.	90 to 500	Lake beds containing some lignite, fresh water fossils and thin bed of rhyolitic ash. Talus consisting of sand, gravel and boulders. Limestone and sandstone blocks representing material thrown out of the time of the impact. Some meteoric fragments found in debris.
MESOZOIC	TRIASSIC	MOENKOPI	0 to 60	Chocolate brown sandstone
CARBONIFEROUS	PERMIAN	KAIBAB	250	Grey limestone with some thin sandstone members.
		COCONINO	660	Light colored cross-bedded sandstones.
		SUPAI	1000	Uniformly red to buff sandstone and red sandy shales.
		MISSISSIPPIAN: REDWALL		MASSIVE, Grey, fossiliferous limestone.

The masses of rock which are upturned consist in the main, therefore, of Permian sediments with the exception of a variable thickness of thin

GEOLOGIC REPORT ON METEOR CRATER (CONT.)

Moenkopi outliers. There is observed on the rim much debris and fragmentary rock materials which have been classified as Quaternary in age. Comprized in this group is the meteoric shale, meteoric rock fragments of the original formation, and metamorphosed masses of Coconino sandstone (rock flour). On the floor of the crater is some recent stratified rocks, consisting mainly of crushed limestone and sandstone fragments, which have been identified as lake beds, indicating that the interior was once occupied by a lake, at a time when the climatic conditions of the region were much humid than at present. These lake beds are around 90 feet in thickness and are considered to be of Pliocene age. They contain fresh water fossils.

The crater rim is capped by material thrown out of the crater. Land slides along the rim have removed portions of the Kaibab limestone and Coconino sandstone. Limestone and sandstone blocks are present on and surrounding the rim. They range from small fragments and fine dust up to 25 feet or more in thickness. Most of the coarser material is limestone since the sandstone is more easily crushed.

Regionally the rocks lie nearly horizontal with dips of only a few feet to the mile. Angles of dip along the rim of the crater vary from 10° to 80° with an average perhaps of around 30° . The dips are all in rough radial fashion from the center of the crater and has been stated previously, they become increasingly greater from a point on the north rim, until the arched portion of the rim at the south is reached. A dozen or more faults may be seen on the inner walls of the irregular rim but due to the debris they cannot be traced to any extent. The regional structure is broken by Sunshine mountain, 12 miles southeast of the crater.

AGE OF THE CRATER

D. M. Barringer, Jr., has considered briefly the age of the cone. He states that it cannot be less than 700 years old, since a cedar tree with that number of annual rings was found growing on the rim. He also concludes that it cannot be more than 5,000 years old, from the lack of erosion, particularly of the chemical erosion on the limestone blocks, and finally infers that the true age will no doubt be found between these two limits. Mr. Barringer mentions the legends of the Navajo Indians, who are said to have a story about the crater which coincides very closely with what actually occurred. A hole in the ground would not likely stir the imagination of the Indians, since they are familiar with the many volcanic craters of the San Francisco mountains, 50 miles or so away, and attach little importance to them. But about Meteor Crater they are said to have marked superstitious beliefs, and they are supposed to have a legend which describes the descent of one of their gods from the sky, in clouds of fire, to bury himself in that particular spot. I do not attach much weight to such traditions among the Indians since it is generally considered as improbable that legends

could be carried down for more than a few centuries by such primitive people. Professor Elihu Thompson (29) mentions these Indian legends which state that a number of their tribe were killed when the body fell and that they now send to the crater and secure the white silica dust to sprinkle around when they have their ghost dances, indicating that they still retain some superstition in regard to this natural phenomena. Mr. Barringer states that the Indians will not carry away any of the iron, however, I have been informed from other sources that there was quite a traffic in this material for many years and that tons of it was collected by the Indians and sold to traders.

On the basis of the effects of erosion Tilghman favored an age of not more than 10,000 years and probably less than 5,000 years for the crater.

According to the geologist attached to the geophysical survey the age of the crater is estimated at 50,000 years. This figure was arrived at upon consideration of the sedimentary deposits, conditions for deposition of same in arid climatic regions, is recognized as an extremely slow process. The proof of a very considerable period of erosion.

The most exhaustive study of the age of the crater which has come to my attention was made by Professor Eliot Blackwelder (7) in 1930. He lists five factors which have a bearing on the determination of the age of the crater as follows:

(1) - The lake deposits at the bottom of the crater, shown by drilling to be from 70 to 90 feet thick, comprise stratified sand and quartz flour with many lacustrine gastropod shells and diatom frustules. This is interbedded with platy fresh-water limestone, lignitic beds, diatomite and a single layer of rhyolitic ash $\frac{1}{4}$ to 3 inches thick (12). The characteristics of the deposit are such as to indicate a body of water of many years duration, rather than a seasonal pond of playa. This in turn suggests a climate distinctly cooler or more humid than the present one, for there has been no pond in the crater since it first became known to white men. At present the water table is about 200 feet below the floor of the pit, whereas during the presence of the lake it must have been somewhat above it.

(2) - The bed of volcanic ash is plainly the record of an explosive eruption in the southwestern arid region. No such eruption (rhyolitic ash) is known to have occurred since late glacial or Pleistocene times.

(3) - Both upon and beneath the lake beds are wedge shaped alluvial deposits built out by streamlets descending the crater slopes. The lower fans are said by Tilghman (3) to extend under the lake deposits, although not to the center of the crater, as indicated by exploration in shafts and drill holes.

GEOLOGIC REPORT ON METEOR CRATER (CONT.)

(4) - Most of the limestone blocks upon the parapet are deeply cavernous and corroded by the effects of solution. As this process works rather slowly in an arid climate, the advanced stage of solution pitting indicates a long period of time. A study of the ravines and graded valleys on the parapet indicates that the latter has suffered more erosion than the latest (Tioga) glacial moraines, but hardly so much as those of an older epoch.

(5) - As a fifth source of evidence, the present condition of the talus slopes within the crater affords instructive suggestions regarding the physiographic history. A close scrutiny of the talus shows that it is no longer growing but has extensively eroded into a series of ravines between which a few wedge-shaped remnants of the talus still remain. The talus is therefore the product of an earlier age, long since past. It is a well known fact that talus formations is particularly favored by the wedge work of ice (frost action) and that aridity tends to prevent it.

Dr. Blackwelder summarizes his points by stating that it seems very significant that the evidence along these five independent lines points to a long period of atmospheric action and also rather definitely to climatic changes from warmer and drier to colder and moister and back to dry again. From these considerations he is led to suspect that the crater was made during the last interglacial (or Post-Tahoe) epoch, perhaps 40,000 to 75,000 years ago. He concludes that no finality can be claimed for this estimate, but as a counterbalance for the current view, that the crater is only a few thousand years old, it has considerable value.

CANYON DIABLO METEORITES

It has been stated by Mr. Barringer that a far greater number of iron meteorites have been collected from the debris around the crater rim and a short distance from it than have been found in all the rest of the Earth's surface. By looking over a map showing the distribution of some of the material collected up to 1908 one cannot fail to be impressed with the concentration of meteorites as the rim is approached. This fact alone, it seems to me, presents some evidence that there is a connection between the meteoric material and the crater.

But how do we know that this is meteoric iron? All of the meteorites collected give what is known as the Wiedmanstatten figures, that is if they are etched, they will show after smoothing a peculiar internal crystalline structure which is characteristic of those iron meteorites which have actually been seen to fall upon the earth's surface. Iron meteorites are so unlike the normal rocks of the Earth's crust that they are easily recognized.

Mr. Barringer gives this description of the meteoric material

GEOLOGIC REPORT ON METEOR CRATER (CONT.)

found at or near the surface in the vicinity of Meteor Crater. The chunks of solid nickel-iron, known as Canyon Diablo meteorites and which may be observed in most of the large museums, are irregular shaped fragments of metallic nickel-iron, with the surface, which is characteristic of many iron meteorites, looking as though thumb-prints had been made all over it when it was soft. When cut they reveal a bright, silvery surface, which will rust only very slowly if at all. If the surface is etched, the so-called Wiedmanstater figures of crystallization may be plainly seen. The composition of the unoxidized fragments is roughly as follows: iron, 92%; nickel, 6%; carbon, (both crystalline and amorphous) phosphorus etc., 2%; cobalt, copper, etc., traces; platinum, iridium, palladium, etc., about four-tenths of an ounce per ton. The pieces so far discovered range in weight from less than an ounce to about 1,400 pounds.

Dr. L. J. Spencer (26) considers a point of interest about the Canyon Diablo irons in the presence in some of the masses of small diamonds, both black and white; and it is stated that doubtless this observation suggested to H. Moissan his experiments on the artificial production of diamonds. Moissan also detected in the iron the presence of native carborundum (silicon carbide), which as a meteoric mineral has been named moissanite. Other rare constituents of this meteoric iron are platinum metals. One assay yielded platinum 3.65 and iridium 14.95 grams per metric ton, but some other later trials gave negative results.

There has been much speculation as to the magnitude of the meteor which would be required to form a crater of this size. One of the first methods of calculation used by the Barringer interests and suggested in an old handbook of artillery, was to a formula for computing the probable effect of bombarding masonry with round-shot. This formula stated that where the diameter of the shot was 1, the depth of the hole would be about 2, and the diameter of the hole about 7. Applying this to the observed features of the crater it was estimated that the diameter for the projectile would be around 550 feet.

Tilghman (3) has calculated that the debris now represented in the parapet would, if replaced in the crater, fall short by millions of cubic yards, of filling the cavity. The difference may well have been removed by erosion. Gilbert (16) has estimated the capacity of the crater at 82 million cubic yards. Dr. Elihu Thompson and Dean Magie of Princeton have made a number of calculations, considering the speed of the projectile, the amount of work involved in throwing out of the hole some 350,000,000 tons of rock, and arrived at a somewhat smaller figure for the diameter of the projectile than that calculated by Barringer. The latter concluded that a sphere about four hundred feet in diameter, which is probably a conservative estimate, would weigh in the vicinity of 10,000,000 tons.

Professor Thompson (29) makes the following calculations, - assuming that one ton of material in the meteor was capable of displacing thirty tons of rock when it struck, then the mass of the meteor should have been

approximately at a low estimate, say, five million tons. By using a figure of six-tenths of an ounce of platinum and iridium per ton, with an estimate of three million ounces, at a value of \$30 to \$35 per ounce, the total value would be in the vicinity of \$100,000,000. Various estimates of this type have been made and there is little wonder that extensive exploration work has been undertaken to locate the ore body, for this would represent only one of the valuable constituents of the mass, as indicated by assays.

HISTORY OF EXPLORATION "METEOR CRATER"

Army scouts first visited the site of Meteor Crater in 1871 and called it "Franklin's Hole". It was 15 years later that Mexican sheep herders gathered some of the metal and gave it to railroad contractors, who in turn sent it east, where it was identified as meteoric iron. Thus the first known example of a supposedly meteoric crater was discovered. Thousands of specimens of the meteoric iron were collected and shipped to museums in all parts of the world as well as to other interested parties. "Canyon Diablo" meteorites, as these fragments have been called, range in weight from a few grains up to 1,400 pounds. It has been stated that more iron meteorites have been found in this locality than have been discovered thus far in all of the remainder of the Earth's surface. The circular ridge forming the crater rim, which may be observed as a range of low-lying hills for miles around, had been referred to as "Coon Butte", "Crater Mound", "Meteor Butts", "Crater Mountain", but it is now generally called "Meteor Crater". The meteoric iron which is supposed to exist beneath the crater, and which has been found in large quantities in the vicinity, has been called the "Canyon Diablo meteorite", from the Canyon Diablo nearby, and also the "Barringer meteorite" from the Barringer family, who have been interested in exploration for many years.

In 1903 Mr. D. M. Barringer, of Philadelphia, became interested in the commercial prospects of the locality; and was among the first to advocate the theory of meteoric origin. Briefly Mr. Barringer and his associates reasoned as follows, - as one approached the crater the amount of meteoric iron became greater and it was also noted that the size of the fragments increased in this direction; that the fragments of metallic iron and pieces of iron oxide (which by their structure and composition was considered to have been derived from terrestrial oxidation) were found to be intimately admixed with the material excavated from the hole - the conclusion being that the excavated material and the meteorites got there at the same time. They likewise assumed that the hole was made by a meteorite or a cluster of meteorites, or else the juxtaposition of the hole and the meteorites was accidental. If accidental, there remained the coincidence of an unprecedented fall of meteorites hitting the same spot on which suddenly appeared an unprecedented crater in the sedimentary rocks, and hitting it at the same instant of time in which the crater was made. Prominent scientists who critically examined the locality and agreed to the meteoric origin as advanced by Mr. Barringer were Professor Elihu Thompson, of Boston, and Dean William F. Magie, of Princeton.

Mr. Barringer interests at first reasoned that since the hole was round, the meteorite must have fallen vertically, and therefore the main mass must be in the center of the hole. On this assumption they started a shaft at the center and expected to run radial drifts, like the spokes of a wheel, after reaching the required depth and until such time as they encountered the main mass. They assumed that the meteorite had not penetrated more than 1,300 feet below the surface of the plain since none of the fragments of Red Beds, which lie around this depth, had been thrown out of the crater. At 200 feet they encountered soft Coconino sandstone, which had been so shattered by the impact as to be in the form of fine white dust, so fine that 55% of it would pass through a 200 mesh screen. This silica dust had become mixed with water from the rather large catchment area of the crater and formed a quicksand through which they were unable to drive their shaft.

They next proceeded to sink drill holes in the bowl of the crater in an effort to locate the meteoric mass. The central portion was explored by this method to a depth of 1,000 feet. Although they failed in the main purpose of the work some interesting facts regarding the crater were ascertained. To a depth of some 90 feet there occurred stratified lacustrine sediments. Below this depth and for a distance of six or eight hundred feet there was encountered a jumble of large and small fragments of limestone and sandstone (unstratified), which was considered to be material thrown into the air at the time of the impact, immediately falling back into the hole. Two types of metamorphosed Coconino sandstone were found in the drill holes. The first type, which is also found on the rim of the crater, appeared like unaltered sandstone. Upon close examination, however, it was found that nearly every individual sand grain had been cracked and shattered so that it could be rubbed to dust between the fingers. The conclusion was that a shock wave, of sufficient intensity to crack the sand grains, ran through the solid rock ahead of the impacting meteorite. The second type of metamorphosed sandstone was considered to be due to heat caused by the friction of the advancing meteorite. The heat was so intense as to fuse the silica and it was stated that the only other case known in nature of pure silica being melted without a flux, occurs when lightening strikes a bed of sand, producing folgurite glass.

According to the Barringer interests the two types of metamorphosed sandstone presented additional proofs of the meteoric theory. The shattered sand grains show the effect of a sudden terrific blow, rather than the effect of any volcanic explosion. The millions of tons of finely pulverized sandstone (rock flour) which is found abundantly on the rim in the crater and in the drill holes could not have been produced by a steam explosion. Likewise it is stated that no volcanic action has ever been known to fuse pure silica.

At depths of around 800 feet the drill holes were said to have encountered unaltered "Red Beds" sandstone. This gave them a clew as to

the maximum depth at which the meteorite must lie buried and also presented additional proof that whatever caused the crater came from above and not below. The work was suspended in 1908, since the drill holes failed to locate the whereabouts of the meteorite, and most of the funds available for the search at this time had been exhausted.

An intensive study of the physical features of the crater was then undertaken by the Barringer interests with the hope of finding some clue as to the direction of approach of the meteorite, since from the results obtained by explorations to this date, the evidence seemed to point that the meteor had not fallen vertically at all. They observed that by firing a rifle into mud an excellent replica of the crater could be made, that the rifle need not be fired in a vertical direction downward, but that it might be held at an angle even less than 45 degrees from the horizontal. A detailed study of the walls of the crater finally revealed what was considered an important fact. The rocks exposed in the walls were seen to dip radially away from the hole and it was observed upon plotting these dips that their magnitude increased rapidly until a point on the south rim was reached. They then reasoned that as the southern portion of the rim was approached the projectile was plowing deeper and had therefore bent back the rocks more steeply on either side, with its lifting force eventually spent, the mass was lodged in the southern sector. Factors tending to strengthen this theory were given as follows, - the north rim is lower than the south, which is due in part to the lower dip of the strata, but chiefly due to the fact that far less volume of excavated material has been deposited on the north, the amount of ejected material increases progressively towards the south, on both sides, until the greatest volume is found on the southern rim, where the greatest arching and uplifted strata appears.

Due to lack of funds, the theory of oblique approach of the meteorite, was not acted upon until 1920. A churn-drill hole was then sunk on the southern rim, as near as possible to the center of the great southern arch, and after many difficulties the drill eventually reached a depth of 1,376 feet where it became permanently stuck. At a depth of around 1,200 feet it was stated that small fragments of oxidized meteoric material were found mixed with the shattered sandstone. As the hole was drilled deeper this material increased rapidly in quantity until it composed about 75% of the mass and in all respects it answered the description of the oxidized meteoric iron found at or near the surface. It was assumed that it would have been impossible for a small amount of this material to drive itself to this depth in the rocks had not a much larger mass have plowed the way for it. It was considered almost certain that the drill had at last encountered the main mass of the meteorite. Since the mining company had greatly exceeded the estimated cost of drilling the hole and were unwilling to go to further expense, they abandoned their lease at the termination of the drilling in 1924.

Besides the interest of the Barringer family in exploration up to

GEOLOGIC REPORT ON METEOR CRATER (CONT.)

this time the Standard Iron Company, the United States Smelting and Refining Company, the Mining Exploration Company had been associated with various projects to discover the meteorite. In 1927 another company, the Meteor Crater Exploration and Mining Company was organized, obtaining a long-term lease on the 2,369 acres formerly owned in fee by the Standard Iron Company.

GEOPHYSICAL SURVEY

The Meteor Crater Exploration and Mining Company who I am told now own the lease, instigated a geophysical survey of the area by the International Geophysicists, Incorporated, of Los Angeles, in October, 1930. It was stipulated that independent surveys were to be made by three different groups of their staff and that separate reports were to be submitted by each group. A geologist examined some 1,000 acres at Meteor Crater and vicinity; the Magnetometer party, consisting of three members, surveyed some 5,000 acres; and the electrical survey party, of two members, reported on 700 acres. The details of the various surveys was presented in a paper by Mr. J. J. Jakosky (17) at a meeting of the American Institute of Mining and Metallurgical Engineers in New York City. While I have not had an opportunity as yet to review this paper, Mr. George M. Colvocoresses, general manager of the Meteor Crater Mining and Exploration Company, of Phoenix, Arizona, kindly permitted me to read a copy of their formal report. The objective of the geophysical survey was to obtain information about the origin of the crater, the advisability of continuing with exploration work, and if the latter was to be undertaken the location where such exploration work should be directed.

The factors governing the choice of geophysical methods were as follows: (2) The electrical conductivity of the unoxidized meteoric material was over a million times greater than the surrounding country rock. If sufficient quantities of this material existed underground the electrical studies would indicate its presence (assuming no other electrically complicating factors) by a decrease in the effective resistivity. (b) The magnetic permeability of the unoxidized meteoric material was also over a million times greater than the surrounding sedimentary series and should cause a magnetic anomaly if the material existed in sufficient amount at its depth, and again assuming no complicating magnetic factors.

In the magnetometer survey two factors were watched closely, - (1) anomalies which would indicate presence of meteoric materials; (2) anomalies which would be caused by an igneous intrusion or any change in the basement complex. This data was later desirable in connection with the possibility of a steam explosion being the cause. Should such a steam explosion have occurred, its origin and source would probably be indicated, by magnetic anomalies associated with deeper structural effects.

From a study of the results obtained in the magnetometer survey it was concluded that the crater is of meteoric origin in view of the following:

REPORT ON METEOR CRATER (CONT.)

(1) Magnetometer work does not show a change of regional gradient which would account for a buried igneous mass from which the steam might have emanated. (2) If the steam explosion were the cause one would expect some evidence of hydrothermal action which is not in evidence. (3) It is doubtful that, in a steam explosion, temperatures, sufficient to account for the formation of Le Chatelierite (1625° Centigrade) would obtain. (4) The intimate association of meteoric fragments with the ejected debris is undisputable evidence. (5) The fact that previous magnetometer surveys did not show anomalies due to the buried meteoric material has long been cited by those favoring the steam explosion theory. This was because their instruments were not sufficiently sensitive and also because such work was not carried out in sufficient detail to allow differentiation between regional gradient, increases anomalies due to a buried mass, decreased anomalies due to pulverizing and shattering of the fill material, and topographic attitude effect.

The results of the electrical work were as follows: (1) The water level inside the crater (about 180 feet beneath the present dry lake-bed) and level outside the crater about 550 feet below the level of the plateau are of the same elevation. (2) A well defined electrically conductive area occurs in the southwest quadrant of the crater. This calculated to be caused by two factors, (a) a deeper fragmatized or shattered zone underneath the area, and (b) such meteoric fragments as may be mixed with the field material in this zone. This zone is the area wherein all future exploration efforts should be directed. (3) No such area exists in any other part of the crater. (4) Sub-surface structural conditions are quite uniform through the crater area. (5) The crater is undoubtedly of meteoric origin. (6) The electrical effect would be classed as moderate to fair.

Briefly the geological report considered the crater to be formed by the impact of a meteor or a swarm of meteoric material. The possibility of a steam explosion is not probable. The age is estimated at 50,000 years. The latter figure is arrived at since there is a series of sedimentary deposits originating in arid climatic conditions, under which conditions of sedimentation is recognized as an extremely slow process. The record in these beds of a volcanic disturbance in the vicinity, probably at Sunshine mountains. The proof of a very considerable period of erosion. From a geological study of the crater there appears to be foreign material in the southern portion of the crater.

By way of summary the magnetic survey pointed to the presence of an area of continuous magnetic material in the southern portion of the crater, at depths of 200 feet and more, with concentration probably increasing with depth. By this method it was regarded that the mineralized area appeared to be as much as 600 feet in length and possessing appreciable depth and breadth. The electrical survey indicated the presence of an area of high conductivity in the southwest quadrant, between the center and the rim of the cone, at a depth of approximately 700 feet. That the original and

altered material found in the area indicated that the zone of higher conductivity cannot be due to rocks in place, or to their products, or to fill material. The conclusion advanced by this group infer that the material is almost certainly of metallic character. The geologist observed that the regional conditions are more or less simple, with flat sedimentary beds lacking in igneous intrusions or structural deformation, except local faulting caused by the impact. It was concluded that the absence of such complicated factors were indicative of the presence of meteoric material. Evidence warrants drill-hole exploration and five tests are recommended. The general location of the areas within which magnetic highs was located, agrees with the locations obtained in the electrical surveys, wherein a higher conductive zone was found. The magnetic high is also in the same general area as the location obtained from geologic data.

The results of the geophysical work are not considered sufficiently definite, in view of the complicated factors involved, to warrant calculations or predictions regarding the tonnage or mass of material which may be present. The chief result of the work has been to definitely delineate the area wherein future development work should be concentrated.

DRILLING OPERATIONS

Many trial shafts, six or more in number, and some 25 test holes have been put down in an effort to locate the meteorite. The results obtained in the deepest test hole, which reached a depth of 1,376 feet, have been described. Mainly upon the recommendations of the geophysical survey, the present management, the Meteor Crater Exploration and Mining Company, in the last few years made another attempt to locate the supposedly buried mass. Since considerable difficulty had been encountered in previous tests due to pulverized material and debris it was decided to sink a 1,500 foot compartment shaft, on the south rim of the crater, outside of the crater and then cross-cut to the location of the main mass as determined by geophysical methods. This shaft reached a depth of 713 feet. Large amounts of water, 1,000,000 gallons per day, were encountered at around 650 feet from cracks and fissures in the Coconino sandstone, and the operation had to be abandoned at the above depth. Some have suggested that it might be possible to cut an underground tunnel for the transportation of this water to the Salt River valley some hundred miles to the south, however, we are interested to know that work on this venture has not started as yet. It is stated that approximately \$600,000 have been expended in efforts to exploit Meteor Crater up to the present time. No work is being carried on at present. The Mining Company has a custodian of the crater to show visitors around for which a fee of 25 cents is charged. An observation tower has been erected on Highway 66 recently and is called the Meteor Crater Observatory. True little can be observed from this point.

GEOLOGICAL REPORT ON METEOR CRATER (CONT.)

THEORIES AS TO ORIGIN

As may be seen from the partial bibliography at the end of this report, the literature has contained many articles on Meteor Crater during the past 35 years. While I do not mean to imply that I have read all of these references I have perused many of the more recent ones and there seems to be only two real theories as to origin, namely, meteoric or volcanic. The limestone sink idea has been well disproven as will be noted from the following page.

Meteoric Theory of Origin

The Meteoric theory for the origin of the crater which was first propounded by Bellinger has since been agreed to by G. P. Merrill (19); J. J. Jakoski (17); Elihu Thompson (29); L. J. Spencer (27); C. L. Longwell (18); Eliot Blackwelder (7); H. N. Russell (25); C. O. Lampland (30); H. S. Colton (31); and others. Some have argued that the meteorite was in the form of a single projectile and others that it was a swarm of meteoric material but all consider the crater the result of a meteoric impact of some sort. There has also been some disagreement among the above writers as to whether there was an explosion accompanying the impact. Most of the authors seem to favor the idea of an explosion.

Some of the main ideas advanced which tend to prove this supposition are as follows:

1. The actual presence in the debris around the rim and for miles around of much meteoric iron. The fact that concentration of this material increases as the center of the cone is approached. That the meteorites, admixed with the debris, must have had something to do with the formation of the crater or else they must be assumed to have fallen at exactly the same time and precisely the same spot on which a crater was being moulded, however formed. Such a double coincidence they contend would be next to a physical impossibility.

2. No evidence whatsoever of volcanic activity has been noted in the immediate vicinity of the crater.

3. Borings show that the crater is filled to a depth of about 700 feet with debris shattered by the original disturbance. The sandstone has been crushed to powder or "rock-flour" and some has undergone fusion, indicating a temperature of around 1,500^o Centigrade. The temperature of a steam explosion which may have accompanied a volcanic intrusion, as inferred by the opponents of meteoric origin, would not be high enough to produce the silica-glass.

4. The structural features of the crater, the dip of the strata, with notable increase in dip towards the arch on the south rim, seems to be of considerable significance, with such an arrangement not probable.

under volcanic origin.

5. The results of the geophysical survey as conducted by three independent parties have been detailed on the preceding pages and they all point to a meteoric impact.

6. The argument that to date no meteoric mass of any size sufficient to have produced the crater has been located and that therefore it could not be meteoric in origin, means no more than the assumption that there are no oil pools in certain areas because of the fact that many dry holes have been drilled, or that there are no commercial ore deposits in certain localities since much prospecting has been undertaken.

7. If the crater were formed by a steam explosion from hot solutions or gases coming from underneath the present sedimentary strata then there should be evidence of hydrothermal action. Also from the results of borings and geophysical work it was observed that the underlying Supai red beds are in undisturbed position.

Volcanic Theory of Origin

The theory that the crater was produced by a volcanic steam explosion in the Coconino sandstone was first advanced by Gilbert (16). He arrived at this conclusion since the feature is in the midst of an area of volcanic activity, with many recent volcanic cinder cones at no great distance, and its similarity to these latter features. But there is no evidence of volcanic activity at Meteor Crater such as is present at these other localities. I have been informed that Mr. Gilbert leaned toward the theory of meteoric origin prior to his death although he refrained from publishing anything in this regard. Darton (10) has been one of the few prominent scientists in recent years to hold to the theory of volcanic origin and the writer is frank to admit that he does not present much evidence in support of same. It is most certainly difficult to conceive of huge chunks of limestone being blown for miles around the crater, and to visualize the force involved in such a blast, with no semblance of volcanic rocks left behind. I might add also that the surrounding countryside has been pretty well looked over in search for meteorities.

LIMESTONE SINK THEORY

In Science, Jan. 9, 1931, Mr. F. S. Dellenbaugh (11) suggests that the great pit of Meteor Butte is a sink formed by ground water solution in the Kaibab limestone. The geologic facts as enumerated by Mr. Chester H. Longwell (18) disprove Mr. Dellenbach's theory conclusively. The former agrees that the Kaibab limestone of this region contains many sinks, which receive much of the drainage of the Kaibab plateau, but states that it would be a wonder indeed to find in a semi-arid country a sink, almost circular in plan and nearly a mile in diameter, occupying the entire top of a hill, where the only water available for solution consists of the

GEOLOGIC REPORT ON METEOR CRATER (CONT.)

scanty rain that falls directly on the area of the pit. Meteor Butte is a hill with the ground sloping away from the very edge of the rim on all sides and hence no outside drainage can enter the depression. Mr. Longwell mentions further the following points which are considered sufficient to remove the sink hypothesis from consideration, -

1. A limestone sink does not reach deeper than the base of the soluble formation in which it is formed. The Kaibab limestone here forms less than half the height of the walls. Beneath the Kaibab is the Coconino sandstone which is one of the most insoluble rock formations known. Any suggestion that the Coconino sandstone may have been caved owing to solution directly beneath it is ruled out, because the sandstones rest on red shales and sandstones many hundreds of feet in thickness.

2. At the top of the pit the slopes on all sides are littered with fragments of the Coconino sandstone. These fragments range in size from minute bits of broken sand grains to blocks of large size; and they are mixed with similar debris derived from the Kaibab limestone. How were these pieces brought up from their normal position hundreds of feet below? Obviously by a great force that acted upward and was explosive in character.

3. Although the rock strata are practically horizontal beneath a wide surrounding area, in the walls of the crater these strata are tilted and otherwise disturbed. On the south side, where the wall is steepest, the beds dip directly into the wall, at a high angle. There is no haphazard arrangement, such as would be expected if the disturbance were due to slumping into a solution pit. The tilt is consistent in direction and indicates that a powerful lifting force acted inside the pit, with concentrated action on the south side.

4. In places the quartz sand in the Coconino sandstone forming the lower part of the walls has been fused to glass (lechatelierite). This is astonishing in view of the high melting point of quartz (nearly 1500° Centigrade). Evidently the crater has been subjected to intense heat, such as could be generated only in an exceptional way.

Mr. Dellenbaugh sees support for his hypothesis in the fact that both inside and outside slopes of the crater show effects of erosion. Whatever its origin, the crater has been outdoors since its formation, and modification of its slopes by erosion has been inevitable, the fate it shares with every other landscape feature.

CONCLUSIONS

The writer has conversed with numerous geologists, astronomers, mining engineers, and has communicated with geophysicists who are familiar with and have examined Meteor Crater. After reviewing many of the various theories advanced to account for the origin of the crater and after studying

the situation on the ground I can see no other solution than that it was formed by a meteoric impact. I was skeptical at first due to the fact that to date, despite many years of work in exploration, no large mass of meteoric material has been found buried in the crater. But this does not alter the fact that more meteorites have been found outside of the crater than have been discovered to date in all the rest of the earth's surface. As the crater is approached the meteorites are more concentrated and some of them have been found mixed with the debris on the rim; therefore, if the crater is due to some cause other than meteoric impact it must have been formed at the identical moment that a mass of meteorites struck the spot. With the world for a target and in consideration of the time element it does seem that such a double coincidence would be improbable. Then there is the matter of intense heat which fused the sandstone, the large blocks of limestone scattered for miles around the crater, the arrangement of dips along the rim becoming increasingly greater at a point on the south, not to mention the general form of the crater with no evidence of volcanic activity it now appears that practically all of the real evidence points to meteoric origin. The consensus of opinion of most of the leading scientists is that the crater is the result of a fall of a meteorite. -

Regardless of the origin, however, the crater contains much in the way of inspirational appeal, and would doubtless make a most important addition to the National Park Service chain of monuments throughout this region. Due to the fact that considerable sums of money have been spent in exploration it is not known if satisfactory arrangements could be made in this regard. If the cone is the result of an impact of a meteor, as is now generally conceived, it is the largest known crater in the world formed by such a phenomena.

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MONTEZUMA BIRDS

By Betty Jackson

Birds seen this month are as follows:

Arizona Cardinal	Killdeer
Mourning Dove	Arkansas Kingbird
White-winged Dove	Ashy Ruby-crowned Kinglet
Red-shafted Flicker	American Merganser
Vermillion Flycatcher	Western Mockingbird
Arizona Blue Grosbeak	Texas Nighthawk
Red-tailed Hawk	Arizona Hooded Oriole
Green Heron	Gambel Quail
Treganza Blue Heron	Cliff Swallow
Black-crowned Night Heron	Hepatic Tanager
Rufous Hummingbird	Abert Towhee
Black-chinned Hummingbird	Turkey Vulture
House Finch	Cactus Woodpecker
Wood Ibis	Canyon Wren

The Mockingbirds came in flocks the last week of July to enjoy the wild grapes which grow so plentifully on the Monument. I had planned wild grape jelly, but didn't get even a glass of it. As each grape ripened, they disposed of it, and I didn't have a chance.

There is a new record for the monument. I mentioned a Canyon Towhee last month, which I had seen at a distance, and which resembled the one that had been around before. I got a good look at him this month, from not more than ten feet away, and he is the Abert Towhee. The black lores and chin are diagnostic.

The Hummingbirds have been kinder this month, the males coming near enough to be identified. On July 31 a male Rufous came close to the window, enjoying our Rocky Mountain Bee Plants, and since August 17 a male Black-chinned has come daily. The females are still regular visitors too.

On July 28 an Arizona Blue Grosbeak was seen flitting through the trees for just a moment.

Nearly every morning since July 31 a pair of Green Heron have come to feed on our fish. In fact, the creek looks like a real bird sanctuary between dawn and eight o'clock, with herons, ducks, quail, doves, Flycatchers, and Killdeer, all in it or on the banks.

Early in August Norman saw a Hepatic Tanager. I neglected to enter it in my notes at the time, so haven't the date.

On August 17 a Red-tailed Hawk startled us with his screams. We hear sounds like a small boy tooting on a tin whistle, three times, then

a pause, then three times again, and so on for quite a while. I understand it is an alarm call, but we couldn't see anything from below the cliff that could have disturbed him. He may have a nest above the cliff, but he hasn't been around regularly enough to make me suspect it.

The same day Norman got a good look at five Wood Ibis on the Verde River. As far as we know, none have been seen before in the valley. They were probably migrating.

On August 20 Mrs. Jennings saw some young Mourning Doves, which must be second brood. I have at last located one nest, which is now empty.

On the 22nd, 12 ducks were feeding on the creek at seven o'clock, and one of them got a fish right in sight of Jess and Jane Jennings. Seven of them were there at the same time on the 23rd. They are American Mergansers, probably the brood we saw being raised.

The Quail are becoming more friendly now that their young are more capable of taking care of themselves. Nearly every morning for a week or two there has been a covey of 19 of them, scratching for seeds on our "lawn." I shouldn't be surprised if they were enjoying depleting our ant population, too. There are two more coveys, of approximately the same numbers, that stay further away from the houses.

Three young Kingbirds were around most of the month, though I haven't seen them for a week. They would spend the day circling our house, from bush to bush, and making noises which for a while were entertaining, but which became definitely irksome after eight or nine hours of steady repetition every day.

Today, the 24th, I heard a cheerful song, and found our friend the Ashy Ruby-crowned Kinglet back again, and very happy.

The cliff Swallows have not been seen for about three weeks.

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RIO GRANDE GLAZES

By Earl Jackson

The following information was obtained from Mr. Glen Lukens, a ceramics instructor from Los Angeles, California. He very generously took considerable pains to see that we thoroughly understood his explanations.

The glaze used on Rio Grande pottery is a layer of litharge (red lead oxide) put on the dried pot, which combines with the silica in the clay of the pot itself to form a glass at a low temperature (980° F.).

For example take a red shale pot. It is made up of the following:

1. Clay base (Al_2SiO_3).
2. Iron Oxide (FeO).
3. Calcium from sea shells.
4. A few insolubles.

When this pot is fired at a low temperature it comes out red, because of the physical reaction of the iron and the calcium. When it is dried and decorated with litharge (PbO), the litharge combines with the silica in the clay base to form PbSiO_2 , or a true glass, at as low as 980°F . Thus PbO plus the SiO_3 (in the Al_2SiO_3) equals PbSiO_2 plus O_2 which goes off in the flame.)

If the pot is tempered with mica, it will not take the glaze, or will take it unevenly, since the mica prevents the union of the litharge and the silicate. Glazed pots are therefore tempered with ground up potsherds, which fulfill the function of keeping the pot from cracking in the heat, and still do not retard the chemical action that makes the glaze.

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TUMACACORI

By Louis R. Caywood

When opportunity offers, on days off or upon the arrival of National Park Service officials or interested visitors, I have taken the time to visit historic and prehistoric points of interest in the Santa Cruz Valley and surrounding country. Besides exploring the better known sites of old Calabasas and Guevavi missions and Fort Crittenden and Fort Mason, I have located several large Indian ruins on the mesas adjacent to the river bottom. These valley ruins have long been known to the cowboys and others since very early days but have never been seriously pot-hunted or vandalized. On the high points of the Tumacacori Mountains west of Tumacacori are found a number of "trincheras".

These trincheras are usually strategic cone-shaped hills or sometimes mountain passes heavily fortified by terraced walls. That they are prehistoric and pre-mission is readily seen upon examination. However, the Apaches, Opatas and Papagos may have used them for defenses at various times and have left their cultural remains.

The trinchera culture, if one might call it that, has long been thought of by archeologists as belonging to the late red-on-buff or Hohokam period with some slight differences in pottery.

The large Santa Cruz valley pueblos belonging to the Hohokam culture must slightly precede the trincheras. After disposing of such

theories about the trincheras as agricultural terraces, or places of worship it is believed that they were places of refuge. Perhaps because of incessant attacks from an invading nomadic people the large valley pueblos (mesa) were abandoned in favor of the fortified trincheras.

The Recent period in the valley is represented by an undecorated pottery and camp sites either in the river bottom proper or on the low mesas or even reoccupation of the large valley pueblos on the mesas. This period is definitely pre-Mission. Consequently when the Jesuit priests arrived these villages were being occupied. The village of Tumacacori was one of these occupied villages. There were numerous others in the vicinity according to the old Jesuit records. It is too bad that we cannot locate the others today and apply the names as the priests did.

The Sobaipuris belonged to the same linguistic stock that the Papagos and Pimas belong to and were found in the San Pedro and Santa Cruz valleys. Sometimes they were called Sobaipuris and sometimes Papagos showing that both tribes were represented or that they were very closely related then. At that time most of the Apache raids and fighting occurred in the San Pedro Valley with people belonging to Chief Coro's village. However, as the priests brought in more and more agricultural products and domestic animals there seemed to be a greater demand for these products and animals by the Apaches. So Chief Coro had to finally move to Sonoita and the fighting and raiding often took place in the Santa Cruz Valley. Had these early Indians remained poor and with no Spanish contacts the Apaches would seldom have raided them. Finally many Spanish troops had to be brought in to protect the Indians and Spanish settlers. The Apache scourge remained with the country until after American times when in 1886 the last of them were rounded up and taken to Oklahoma and a few of the worst to Florida.

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RUMINATIONS

By the Boss.

In our slow growth over the years we have had a problem which used to bother us not at all but has gradually come to worry us more and more. It relates to vacations.

I suppose it is the theory of the Government that when a man takes his vacation his fellows will take over some of his work and the remainder will pile up and be waiting for him when he returns; that somehow we will muddle through. I suppose this because, although we are ordered to give vacations, no arrangements have ever been made for the extra funds needed to pay additional help to handle the jobs while the men are gone.

Here is our situation: at each of 11 isolated posts we have only one man on duty. If each of these men is to receive his annual leave which, under the law, must be granted, it would take all the time of one man for 11 months to relieve successively these 11 lone-post men. The 12th month would be used for his own leave, so this means one full-time job as a relief man. The other alternative, if these 11 men are to get their leave, is to simply abandon each post for one month in the year and take our chances on vandalism, theft, fire, etc., to say nothing of the lack of service to the public for that length of time. Assuming that we want to have continuous service and protection at these 11 lone-post monuments, we need one extra man.

At each of four monuments we have only two men on duty. Heavy travel and size of physical plant makes it as serious to leave these places with only one employee as to leave one of the lone-post places with none. Your lone man trying to hold down a two-man post must go to town for mail and supplies and on official business; he has to work a seven-day week; he has to lock the public out during his meal hours. When there are only two men on the job it is impossible for one to perform all the duties of both for a month. If it were possible for him to do this without being overworked, then why have the second man at all, for in the statement of the case you make it a one-man job. If you agree with me, then the relieving of these eight men on these four two-man monuments will take eight months of another relief ranger's time if your monuments are going to function uninterruptedly.

We have not yet made provision for sick leave in the case of these 19 employees, all of whom must be relieved when they are absent, nor for extended absences on official business, normally a week to ten days annually for each custodian. This readily adds up to three more months, making another total of 11 calendar months of absolutely necessary leave time. The 12th month is the extra employee's own annual leave and we thus account for another full-time relief ranger.

There is nothing academic about this discussion: the situation is very real and very painful and we are stuck with it! The only out

RUMINATIONS (CONT.)

we see is to set up two full-time relief ranger positions.

It seems to me the way to handle this would be for the Budget to recognize that it costs something to give a man a vacation and so let us set up one and one-twelfth salaries per year on these jobs. This would allow us, in our own particular case which is worrying us, to hire the two extra men who would do nothing but relieve these 19 employees. It is an item easy to foresee and compute and we would think it would be a very proper item for the estimates.

Suppose we try it next year and see if the Budget thinks it shouldn't cost anything to give 19 employees their annual leave in the circumstances outlined above; or that the cost should fall in poor service or no service to the public and vandalism and theft at the lone-post monuments; or that it is a regular and normal item of expense to be handled in the budget like any other item we can foresee and estimate on.

Cordially,

The Boss,

SOUTHWESTERN MONUMENTS

MONTHLY REPORT
SEPTEMBER, 1937



DEPARTMENT OF THE INTERIOR
NATIONAL PARK
SERVICE

AMERICAN ANTI-SLAVERY SOCIETY

NEW YORK
1851



DEPARTMENT OF THE INTERIOR
BUREAU OF LANDS
DIVISION

SOUTHWESTERN MONUMENTS

SEPTEMBER, 1937, REPORT

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- SOUTHWESTERN MONUMENTS PERSONNEL -

HEADQUARTERS, Southwestern Monuments, Coolidge, Arizona: Frank Pinkley, Superintendent; Hugh M. Miller, Assistant Superintendent; Parke Soule, Chief Clerk; J. H. Tovrea, Assistant Engineer; Dale S. King, Assistant Park Naturalist; Charlie R. Steen, Junior Park Archeologist; Natt N. Dodge, Junior Park Naturalist; Millard Singerman and Luis A. Gastellum, Clerk-Stenographers; Ira G. Goodwin and William Sharpe, CCC Clerks; F. E. Stonehocker, Machinist; J. L. L. Baehr, Utility man.

FIELD STATIONS

AREA (Acres)

1. Arches - Moab, Utah, Harry Reed, Custodian - - - - - 4,520
 2. Aztec Ruins - Aztec, N. M., T. C. Miller, Custodian- - - 25.88
H. Summerfield Day, Park Ranger-Archeologist.
 3. Bandelier - Santa Fe, N. M., C. G. Harkins, Custodian- - 26,026.20
 4. Canyon de Chelly - Chin Lee, Ariz., Johnwill Faris, Cust. 83,840.
 5. Capulin Mountain - Capulin, N. M., Homer Farr, Custodian 680.37
 6. Casa Grande - Coolidge, Ariz., A. T. Bicknell, Custodian 472.50
J. Donald Erskine, Park Ranger.
 7. Chaco Canyon - Chaco Canyon, N. M., L. T. McKinney, Cust. 21,512.37
 8. Chiricahua - Douglas, Ariz., Frank L. Fish, Custodian- - 4,480.
Homer Bennett and Bronson Harris, CCC Guides.
 9. El Morro - Ramah, New Mex., Robert R. Budlong, Custodian 240.
 10. Gila Cliff Dwellings - Cliff, N. M. No Custodian- - - 160.
 11. Gran Quivira - Gran Quivira, N. M., George L. Boundey, Custodian 610.94
 12. Hovenweep - T. C. Miller, Aztec, New Mex. in charge- - - 285.80
 13. Montezuma Castle - Camp Verde, Ariz., Earl Jackson, Cust. 560.
Jesse D. Jennings, Park Ranger.
 14. Natural Bridges - Blanding, Utah, Zeke Johnson, Custodian 2,740.
 15. Navajo - Kayenta, Arizona, John Wetherill, Custodian - - 360.
Milton Wetherill, Park Ranger-Historian.
 16. Organ Pipe Cactus - Ajo, Arizona, No Custodian - - - - -330,670.
 17. Pipe Spring - Moccasin, Ariz., Leonard Heaton, Actg. Cu. 40.
 18. Rainbow Bridge - Tonalea, Arizona, No Custodian- - - - 160.
 19. Saguaro - Tucson, Arizona, No Custodian- - - - - 63,284.
 20. Sunset Crater - Flagstaff, Ariz., David Jones in charge- 3,040.
 21. Tonto - Roosevelt, Arizona, Thomas Onstott in charge - - 1,120.
 22. Tumacacori - Tucson, Ariz., Box 2225, L.R. Caywood, Cu. 10.
Park Ranger position vacant.
 23. Walnut Canyon - Flagstaff, Ariz., P. Beaubien, Jr. Pk. Arch. - - 960.
 24. White Sands - Alamogordo, N. M., Tom Charles, Custodian-142,987.
James Felton, Park Ranger.
 25. Wupatki - Flagstaff, Arizona, David J. Jones, Park Rang. 35,865.30
 26. Yucca House - Cortez, Colo., T.C. Miller, Aztec, N.M. in chg. 9.6
- Total Area (in acres) - - - - 724,659.96
(1132.2 square miles)

CONDENSED REPORT

IN WHICH ARE GIVEN THE HIGHLIGHTS OF THE MONTH

Coolidge, Arizona,
October 1, 1937.

The Director,
National Park Service,
Washington, D. C.

Dear Mr. Director:

The Condensed Report for the month of September, 1937, follows:

<u>TRAVEL</u>	<u>Sept., 1937</u>	<u>Sept., 1936</u>	<u>Sept., 1935</u>	<u>Travel Year 1937</u>
Arches	----	----	----	1,000
Aztec Ruins	1,086	1,972	1,891	14,303
Bandelier	2,203	1,965	1,594	14,380
Canyon de Chelly	274	217	153	1,422
Capulin Mountain	5,000	4,500	5,000	26,100
Casa Grande	1,887	2,045	1,691	33,661
Chaco Canyon	1,149	1,041	875	8,014
Chiricahua	1,076	709	576	9,228
El Morro	425	423	240	2,298
Gran Quivira	450	503	545	4,414
Montezuma Castle	1,239	1,234	1,782	9,813
Natural Bridges	140	89	87	610
Navajo	64	46	----	329
Pipe Spring	235	518	472	1,042
Saguaro	----	----	----	15,000
Sunset Crater	608	608	665	10,000
Tonto	277	338	338	5,368
Tumacacori	1,025	1,093	937	18,472
Walnut Canyon	1,465	1,672	1,214	10,772
White Sands	9,164	14,005	3,644	91,532
Wupatki	346	329	250	2,080
TOTALS	28,806	33,507	21,954	*279,838

*This total does not include travel to monuments at which accurate travel counts are not maintained. For totals of the travel year 1937 (reckoned from October 1, 1936 to September 30, 1937). See under "1937 Travel", page 221-c.

As might be expected with the termination of the summer season and the opening of schools, travel to all of the monuments has fallen off. Records in every case show a decrease from those of August, 1937. Comparisons with the September, 1936, records indicate a gain at nine monuments and a decrease at ten. The total decrease is more than accounted

CONDENSED REPORT (CONT.)

for by the travel lost through the closing of White Sands National Monument during the month.

000 GENERAL

010 MATTERS OF UNUSUAL IMPORTANCE

Navajo: Father Victor A. Stoner, University of Arizona associate, reports that Inscription House was considerably vandalized during August. Some of the walls were pushed over and at least one new name six inches high was cut on the cliff (Name is Bob Luna). The original inscription on the ruin is now completely effaced and someone has scratched the figures "1661" on the wall just above where the original figures were located.

020 WEATHER

"Spotted" is the only descriptive term that may be applied to weather conditions throughout the Southwestern Monuments during September. In the north, Bandelier and Pipe Springs report torrential rains while Natural Bridges has been abnormally dry. In the south, Casa Grande has been dry, Chiricahua, El Morro, and Capulin report a wet month. Tumacacori reports one of the wettest summers on record. Natives at El Morro and Gran Quivira predict a cold and early winter.

Something new in the way of placing the blame for weather comes from Wupatki (see p. 199) where one of the Navajo Indians states that planes of a newly established air route have frightened away the rain birds.

022 ROAD CONDITIONS IN MONUMENT APPROACHES

In many of the monuments, heavy rains have necessitated considerable maintenance work keeping roads in a passable condition. In general, rough or sub-standard roads are credited, more than any other factor, with holding down travel. Natural Bridges and White Sands are two monuments which report improved road conditions during September.

100 ADMINISTRATION

123 VISITS BY NATIONAL PARK SERVICE PERSONNEL

Headquarters: Geo. Kelley, John Haile, Bob Harris, Lewis McKinney, Tom Onstott, Herbert Maier, Clinton Rose, Bill Stevenson, A. L. Citron, Captain Halff.

Arches: Ben Thompson, Russ. Grater, Hugh Miller.

Aztec: Charlie Steen, Erik Reed, Cy Harkins, Jimmy Brewer, Dr. Gould,

CONDENSED REPORT (CONT.)

Homer Hastings, Myrl Walker, Ben Thompson, Lewis McKinney, James Allen, K. E. Disher.

Bandelier: Chas. Smith, Tom Conley, Erik Reed, Lyle Bennett, J. Dooley, C. Richey.

Canyon de Chelly: Chas. Smith, Undersecretary of the Interior Charles West.

Capulin Mountain: A. Luther, A. Borell, W. Yeager, W. Wirt.

Chaco Canyon: Ben Thompson, Tom Onstott, Carrol Miller, Dale King, Charlie Steen, Frank Fish, K. Disher.

Chiricahua: L. Caywood, Fred Nichols, G. Keller, J. Tovrea, H. Miller, J. Haile.

Montezuma Castle: Tom Onstott, J. H. Tovrea.

Tumacacori: J. H. Tovrea, L. Castellum, H. Miller.

Walnut Canyon: Tom Onstott, F. E. Stonehocker, J. H. Tovrea.

150 NEW EQUIPMENT

Navajo: One new pickup. (See p. 194)

Pipe Spring: One new pickup. (See p. 211)

Walnut Canyon: One new pickup. The two old cars were taken to Headquarters for repairs. (See p. 176)

Wupatki: One new pickup.

160 STATUS OF ALIENATED LANDS

The \$3,000 option on the Dog Canyon water at White Sands has been accepted. (See p. 192)

180 PUBLICITY

White Sands reports many valuable publicity features, some of them national in scope. (See p. 192)

200 MAINTENANCE, IMPROVEMENTS, NEW CONSTRUCTION

210 MAINTENANCE, UNUSUAL

Bandelier: Lightning, which struck a tree upon which telephone line was strung, caused considerable damage. (See p. 203).

Ruins stabilization is progressing well (See p. 206) with the Large Kiva and Sun House projects almost complete.

Natural Bridges: Roads are up in fine shape. (See p. 212)

Wupatki: The leaky roof on the Citadel has been repaired.

220 IMPROVEMENTS

Aztec: A greatly appreciated museum installation has been made. (See p. 184)

Bandelier: Museum cases have been installed in the first room (See p. 202)

CONDENSED REPORT (CONT.)

Gran Quivira: Construction of a temporary garage has been completed.
Montezuma Castle: A new fireplace has been built in the campground.
Wupatki: Protection for the exposed burial has been provided.

230 NEW CONSTRUCTION

Bandelier CCC: Garage Unit #7 of the Hotel Development has been completed, and Unit #1 of the dining room and kitchen of the Operator's Development is finished except for paint and stain.

The Sanitary Sewer Project has been completed as has also the pipe line water supply with the exception of valves and fire hydrants. Sufficient timber has been cut and stored to complete the hotel development.

The inter-communicating system has been finished and hooked up.

Chiricahua CCC:

The Horse-trail Project has been completed. Total, 3,300 feet.

White Sands: Three miles of entrance road have been completed and surfaced and the Recreational-demonstrational program is progressing well (p.192).

300 ACTIVITIES OF OTHER AGENCIES IN THE MONUMENTS

350 DONATIONS AND ACCESSIONS

Headquarters Loan Library: Five steel bookcase sections, and one top and one stand were received and installed in the library. Publications received include 45 periodicals, 10 pamphlets, 18 books, and two reprints.

Headquarters: Three hundred biology specimen labels were received from the Washington office.

Seven prints of pictures taken at Hovenweep in 1887 were received from Mrs. John Ismay of Cortez, Colorado.

Nine prints of the Roskrige pictures of Tumacacori taken in 1889 were received.

400 FLORA, FAUNA, AND NATURAL PHENOMENA

Bandelier: It is feared that many trout were killed in Frijoles Creek following the heavy rains and flood of September 8.

Thirteen new specimens were collected for the herbarium and will be sent to headquarters for positive identification.

Natural Bridges: A heavy pine-nut crop is attracting visitors.

Walnut Canyon: A good crop of acorns is being appreciated by wildlife.

410 RANGER, NATURALIST, AND GUIDE SERVICE

Bandelier: Jerome W. Hendron, temporary ranger, took a position as foreman in the local CCC unit.

Temporary Ranger Donald J. Lehmer returned to school at the

University of Arizona on September 13.

Temporary Ranger Woodrow Spires returned to his home in Phoenix preparatory to going back to college at Tempe, Arizona.

Chaco Canyon: Homer Hastings, temporary ranger, returned to school during the month.

Bob Harris, CCC foreman with the Mobile Unit, bade good-bye to Chaco and went back to school.

Chiricahua: Eliga Alton replaced CCC guide Bronson Harris who did not re-enroll but returned to school.

Arches: Harry Reed, whose first monthly report appears on page 194 of this issue, replaced J. M. Turnbow as custodian.

Canyon de Chelly: Tom Onstott and Alfred Peterson, temporary rangers, completed their summer duties during the month. Tom immediately went to work at Tonto on a per-diem basis.

420 MUSEUMS

Aztec: Eight new exhibits were installed in the Aztec museum and one installation was made in the ruin.

Bandelier: Exhibits were installed in the first room.

Tumacacori: Museum construction is progressing well. (See p. 172)

White Sands: New cases are expected soon and the time is eagerly anticipated when these will arrive and be installed. (See p.192)

460 BIRDS

Headquarters: Bird observation records for the headquarters area have been retyped and brought up to date, and several interesting observations for the month have been recorded.

An immature Pallid Horned Owl with a broken wing has been protected and fed in the hope that it might recover. Present indications point to success in the venture.

Gran Quivira: Wild turkeys are reported from this monument.

Montezuma Castle: An interesting list of observations for the month has been received. This will appear in the supplement to the October Monthly Report.

Pipe Spring: Pinyon Jays and crows are reported invading the monument in numbers to harvest the large crop of pinyon nuts.

Walnut Canyon: Interesting activities of Mearns Woodpeckers are recorded in the September report which appears on page 176.

470 ANIMALS

Bandelier: It is feared that many of the trout in Frijoles Creek were washed away in the bad rains and subsequent flood which swept down the canyon on September 8. (See p. 203)

Gran Quivira: The annual rattlesnake migration was noted this year on September 7. (Details on p. 177)

Montezuma Castle: A Diamondback Rattlesnake and a large centipede

CONDENSED REPORT (CONT.)

were captured for museum specimens, and a large Black-tailed Rattlesnake was killed in the campground. This is quite far north for the latter species to be found. (See p. 189)

Wupatki: Both antelope and deer have been reported between Wupatki and Sunset Crater. (See p. 200)

480 MISCELLANEOUS

Bandelier: Lightning did some damage in the monument this month, setting one fire and also putting the telephone line out of commission. (See p. 203)

500 USE OF FACILITIES BY THE PUBLIC

510 INCREASE OR DECREASE OF TRAVEL

1937 travel to the Southwestern Monuments reached the somewhat astounding total of 291,426 persons, a gain of 36,720, or 14.4 percent more than 1936. This travel figure emphasizes the fact that the Southwestern Monuments have all the problems of a huge (724,659.96 acres) park, plus a few puzzles of our own, such as (1) administration of 26 areas scattered over four states; (2) public demand for personalized service to interpret our scientific and historical features; (3) protection of thousands of very perishable prehistoric structures; etc., etc.

530 NEWSWORTHY VISITORS

Chaco Canyon: An impressive list of visitors appears on the report from this monument on pages 169-70.

600 PROTECTION

620 FIRE

Bandelier: A lightning-set fire burned over about one acre on South Mesa. It was suppressed by Forestry Foreman Fulton with a small crew of CCC enrollees. (See p. 203)

650 SIGNS

El Morro: Several new signs have been installed. (See p. 174)

Montezuma Castle: Two new warning signs have been put up.

Navajo: New directional signs have proved helpful to visitors.

900 MISCELLANEOUS

Bandelier CCC: This unit has been much heartened by the retention of three older men and of 17 additional experienced enrollees.

- CONDENSED REPORT (CONT.)

900 MISCELLANEOUS (CONT.)

Chaco Canyon: A new and much more accurate method of measuring the movement of Threatening Rock has been devised. (See p. 168)

MAIL COUNT

Incoming:

Official	2,889	
Personal	<u>853</u>	

Total incoming		3,742
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Outgoing:

Official only	2,449	<u>2,449</u>
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Total postal mail		6,191
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Telegrams:

Incoming	40	
Outgoing	<u>34</u>	

Total telegrams		<u>74</u>
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GRAND TOTAL PIECES OF MAIL HANDLED		6,265
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Cordially,

Frank Pinkley,
Superintendent.

FIELD REPORTS

- FROM THE MEN ON THE JOB -

CHACO CANYON

By Lewis T. McKinney,
custodian.

I really enjoyed my first visit to Casa Grande; it was just a bit warm for a guy from this neck of the woods but you certainly have a wonderful place there, Boss. I want to come down again just as soon as you have some snow and stay an hour or so longer than I did this time, or maybe a couple of days if you will let me.

Boss, you should see Vivian at one of his first-aid lectures to the Navajo CCC's. It is almost as interesting as a three ring circus. I call it his physical anthropology class.

Things are still going strong at Chaco, the CCC's are certainly making a showing on Pueblo Bonito. I believe within five years we could have it pretty well under control; of course, within a year we can get most of the real bad places in shape.

The roads from both directions have been worked by the U. S. Indian Service, the State Highway Department, also by San Juan and McKinley counties and are in fair shape at the present time. They have not been very bad any time this month as we haven't had any rain to speak of.

One thousand one hundred forty nine visitors were through the monument this month, coming in three hundred seventy seven automobiles. Two aeroplanes took a look at us for a few minutes, or at least the people that were in them did. Thirty states were represented. Spain, Canada and Washington, D. C. were also represented.

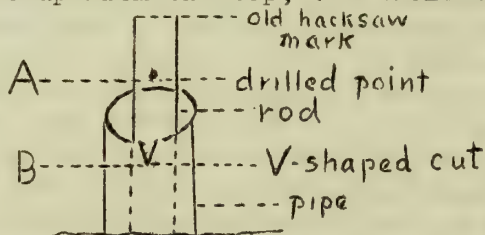
Ben Thompson, Tom Onstott, Carrol Miller, Dale King, Charlie Steen, and Frank Fish and family were Park Service visitors this month. Ben Thompson was through on the eighth of this month. He spent about four hours, then on his way out to Highway No. 63. Tom Onstott came over from Aztec to return my dump truck that he had been using for that monument. Carroll Miller has a fever once in a while and Chaco is the only thing that will bring it down, so his fever came up. Dale King and Charlie Steen were seen on the monument this month. You all can guess what was up when those guys are around. Just out educating the POOR ill-mannered custodians. But they are pretty fine fellows; sometimes I would even put them up for the night. I understand that Cal. Miller had quite a time teaching Charlie Steen how to use a fork to eat with while at Aztec. Of course, Charlie had been over here at Chaco for a few days and had forgotten just what table tools were used for.

CHACO CANYON (CONT.)

Leo Carden, Paul Phillips, G. H. Murphy, Louis Hambliton, Bert Cottingham, Elmer Hassig and wife were visitors in the monument this month. They are all Soil Conservation Service employees and were out here looking over the things that need to be done to prevent further erosion in the Canyon.

I have just received a letter from Dot and John Keur concerning Threatening Rock. Quote: "On July 18, 1937, Homer Hastings, Dot, and I went up on the mesa to measure the rock. Homer wasn't quite certain where and how previous measurements had been made, so he dangled me at the end of a rope to look the situation over. I measured until I got blue in the face (the rope must have been too tight) and found that at each rod, several measurements could be made - varying as much as one quarter of an inch. I tried to devise a scheme by which in the future all measurements would be taken at the exact same point so that you would then have a basis for comparison. Being a softie, I didn't feel that measuring something accurately while standing on your head was great fun. I found it much easier to use a two-legged compass (the kind you use to draw circles), adjust it to the distance while lying (no, that's spelled "lieing", or is it?) on your abdomen, next you come up for air, sit on the rock, light your pipe, place the points of the compass legs on a steel ruler and read off the measurements. Sounds easy; try it some time. Homer found a swell little ruler graduated in 64th's of an inch. Next came the problem: where along the rod are the legs of the compass to be placed? We tried to fix that too. We smoothed off the ends of the pipe (in which the rods slide) and cut a small V-shaped notch right in the top center. Then we drilled a small point in the rod in which the other leg of the compass point fits. On July 29, the installation was completed. On all three rods, the distance (as read off the ruler) between the compass points was two inches in each case. That means that on July 29, all distances between the drilled points on the rod and the V-shaped cuts in the pipe ends were two inches.

"Looking at the set-up from the top, the whole business looks like this:



Distance A-B is two inches on all three rods. If you should find that A-B distance next month is four inches, that will mean that the rock has moved forward two inches, if the distance should be one and one-half inches it has moved back one-half inch (which it won't, I think). I hope teacher made himself clear to the students, if so or not - class is dismissed for the day.

CHACO CANYON (CONT.)

"Just for the fun of it, we also decided to measure the distances between the hubs on the rock and mesa which I established there in 1932-1933. The original measurements are mentioned in my report which is in your files. Some of the measurements are too long to expect great accuracy. If you try to measure up to 68 feet with a steel tape, the pull on the tape, windsway, etc., may easily give you variations of one-quarter of an inch. At any rate, here are the figures. *Take them for what they are worth.

Numbers of Stations	Distance	Change in Distance
: 1 - 6	:16'9-3/4"	: 1-5/8" :
: 1 - 7	:40' 0"	: 2" :
: 1 - 8	:23' 10"	: 2" :
: 2 - 6	:25'8-1/2"	: -1" :
: 2 - 7	:35'9-1/8"	: 1-1/2" :
: 2 - 8	: 9' 7"	: 2-1/8" :
: 6 - 7	:25'7-1/4"	: -1/4" :
: 7 - 8	:26'6-3/8"	: -1/8" :
: 1 - 2	:20'4-3/8"	: -1/8" :
: 1 - 12	:65'1-3/4"	: 2-3/4" :
: 2 - 12	:46' 2"	: 1-7/8" :
: 6 - 12	:62'1-1/2"	: -1/4" :
: 8 - 12	:42'3-3/8"	: -1/4" :
: 3 - 9	:16' 0"	: 2-5/8" :
: 4 - 9	:33'3-5/8"	: 1" :
: 5 - 9	:68'8-1/8"	: 3/8" :
: 3 - 10	:36'5-38"	: 1-1/2" :
: 4 - 10	:18'11-1/8"	: 2-1/4" :
: 5 - 10	:43'6-3/4"	: 3/4" :
: 4 - 11	:55'7-5/8"	: 1-3/8" :
: 5 - 11	:31'2-1/4"	: 2-3/8" :
: 4 - 5	:37'9-5/8"	: 1/8" :

"The stations were measured in the same sequence as they are listed in my old report. In trying to evaluate these figures, I concluded that there seems to have occurred a slight forward movement of the rock. However, there are some measurements that are shorter now than they were some years ago. These shorter distances are between points on the rock and points on that part of the mesa that has split off from the main mesa. Is this piece moving backward or settling downwards, or what?" Unquote.

Maybe with this set up of the Keurs' we will have something more accurate to work with.

WEATHER STATISTICS

Maximum temperature- - - - - - - -90°
Minimum temperature- - - - - - - -41°
Clear days - - - - - - - -16
Cloudy days- - - - - - - -4
Partly cloudy days - - - - - - - -10

VISITORS

During the Archaeology Conference, we had as visitors in the monument for a period of three days: Mr. and Mrs. Charles Amsden,

CHACO CANYON (CONT.)

Southwest Museum; Richard Aldrich, University of Arizona; Earl Alcock, U. S. Indian Service; Dr. Ralph Beals, U. C. L. A.; Gretchen Beardsly, University of Michigan; Wesley Bliss, University of New Mexico; Mr. Brainard, Rainbow Bridge Expedition; Dr. and Mrs. D. D. Brand, University of New Mexico; Mr. and Mrs. Ele Baker, Jemez Springs, New Mexico; Anne M. Cooke, Yale University; Harvey Wiley Corbett, New York City; John M. Corbett, Princeton University; Mr. and Mrs. F. H. Douglas, Denver Museum; Dr. and Mrs. Reginald Fisher, Schools of American Research; Lloyd Fisher, University of Pennsylvania; Mr. and Mrs. Grenville Goodwin, Santa Fe, New Mexico; Dr. Anne H. Cayton, Santa Cruz, California; Miss Graves, University of Pennsylvania; Odd S. Halseth, Pueblo Grande; Dr. Florence Hawley, University of New Mexico; Julian O. Hayden, Pueblo Grande; C. G. Harkins, U. S. National Park Service, Bandelier National Monument; Lyndon Hargrave, Museum of Northern Arizona; Dr. Edgar L. Hewett, School of American Research; Dr. and Mrs. W. W. Hill, University of New Mexico; Mr. and Mrs. Frank Hibben, University of New Mexico; Betty Holmes, Colorado Museum of Natural History; Dr. Solon T. Kimball, U. S. Indian Service; Dr. Clyde K. M. Cluckhohn, Harvard University; Lewis J. Korn, U. S. Indian Service; Robert Lister, University of New Mexico; Mr. and Mrs. R. Montgomery, Los Angeles, California; Dr. and Mrs. George P. Murdock, Yale University; S. Elizabeth Murphy, Schools of American Research; Gordon B. Page, Soil Conservation Service; Isabelle Pendleton, Pueblo Grande; Paul Reiter, Museum of New Mexico; Erick Reed, U. S. National Park Service, Santa Fe, New Mexico; Donovan Senter, Harvard University; Dr. Leslie Spier, and son Robert, Yale University; Charlie Steen, National Park Service, Coolidge, Arizona; Dr. and Mrs. Mischa Titiev, University of Michigan; Joseph Toulouse, University of New Mexico; Dr. Ruth Underhill, U. S. Indian Service; Gordon Vivian, School of American Research; Richard Van Valkenburg, U. S. Indian Service; Joe Ben Wheat, University of California; Bill Wheat Van Horn, Texas; Frances E. Watkins, Southwest Museum; Dr. Bradford Washburn, Harvard University; Dr. Heinz Wiesschoff, University of Pennsylvania; Marie Wormington, Colorado Museum of Natural History; Ben Wetherill, Rainbow Bridge Expedition; and Dr. J. F. Zimmerman, University of New Mexico.

Besides those mentioned above, there were several of the University of New Mexico Field Session staff, and a number of students who remained over for the conference after the closing of the Field Session on August 28.

Boss, there are several small pueblo sites and some pit-house sites along the banks of the main Chaco Wash that will go down the wash after one more good rain. I wonder if Dale or Charlie could come up for a few days and look these places over before they go. Maybe there is something we could do to prevent them from going.

Homer has taken off for school, also Bob Harris. I hope the boys learn something while away so they can teach me when they get back. They both seemed happy to get to go, but very sad because they had to

leave the service.

I have already begun to miss both of them a lot; Homer's help, and Bob to argue with. It's tough on Gordon. He has to take the place of both of them.

*****O*****

Lewis didn't enjoy that trip to headquarters a bit more than we enjoyed having him here. Only it was funny to have him talk about the heat; if you had stayed with us two or three days, Lewis, it turned warm and you would have enjoyed it much more.

We will try to get one of the boys in there before the pit-houses you mention go down stream, Lewis. There is no chance of saving them if they are that close to destruction, but we might salvage some knowledge out of them before they go.

Speaking of Gordon and his first aid class among the Navajos, reminds me of that time, some years ago, when we were doing some work up there, when one of the boys knocked a piece of skin about as big as a dollar off one of his ankles. I had to put some iodine on it and warned him that it was going to hurt, but that didn't help him; he jumped about a foot and yowled just like a white man. The stoical Indian in modern times is mostly in the mind's eye of the writer.

We are mighty glad to get that report on Threatening Rock from John Keur. It brings the information up to date; we are gradually accumulating quite a body of information about the rock. - F. P.

*****O*****

TUMACACORI

By Louis R. Caywood,
custodian.

VISITORS

Visitors to see the mission numbered 1025. Of these, 928 were guided, while 97 only looked from the parking area or used the monument facilities. The visitor count this month went below that of September 1936, which was 1093. No doubt, construction of the museum building has kept many people from entering the grounds.

WEATHER

Local people say that this month has been extremely rainy in comparison to other years. The country looks better than I have ever seen any part of Southern Arizona in past years. The cattle are all rolling in fat and there seems to be plenty of grass for range feeding this

TUMACACORI (CONT.)

winter. The abundance of rain has meant remarkably cool days and nights.

NATIONAL PARK SERVICE VISITORS

September 16 - J. H. Tovrea, assistant engineer.

September 20 - Louis Gastallum, clerk-stenographer from Headquarters.

September 21 - Hugh M. Miller, assistant superintendent, from Headquarters.

MUSEUM CONSTRUCTION

This month has seen great changes in the construction of the museum building. The men now work eight hours a day for five days, instead of five hours a day for six days. For about the first month of construction, the contractor was allowed only thirty hours a week, but he is working his men forty hours a week.

All adobe walls, including the parapet walls, have been laid. The ceiling beams and sheathing are all in place. The roof has been nailed on and sloped and the roof drains and down spouts are in place. The roof is now ready for laying the hot tar and asbestos paper.

The electrical conduit has been placed in the ceiling. Plumbing is about 50 percent complete. The view room shutter is in place.

The lobby fireplace has been completed except for plastering. The heater room floor and the foundations for the patio walls have been poured. The slab over the well pit has been poured and finished.

From the way the work is progressing, it would seem that the building may be completed in the early part of December.

Two shipments of museum case reflectors have been received. One is from the Condi-Lite Corporation of New York and the other is from the Imperial Bronze Company of Washington, D. C.

HISTORIC AMERICAN BUILDING SURVEY

Frederick Nichols, junior architect, has been doing considerable work both in research and in actual field work of measuring buildings and sites. He has studied photographs and documents in the Museum of the Arizona Historical Society in Tucson. The Leon ranch house in Tucson has been measured. On September 22, Mr. Nichols and myself measured Calabasas Mission. The final drawing sheets for Calabasas have been completed and certainly look good. The next project will be the measurement of the old mission of Guevavi.

GENERAL

During the month a trip was made to Las Cruces, New Mexico, by

TUMACACORI (CONT.)

Government car to take Nichols that far, where he was met by Charles Krueger, assistant landscape architect, Santa Fe, New Mexico, who took him to Alamogordo. At Alamogordo, Nichols was given a Government car for his official use, by Lyle Bennett. On the return trip, we stopped at Chiricahua National Monument where several improvements were made on the Government car for Tumacacori. During the stay at Chiricahua, Custodian Fish was so kind as to take Nichols and myself to old Fort Bowie. We were impressed by the size of the fort and the setting on the northeast slope of the Chiricahua Mountains. We traversed quite a stretch of the old Butterfield stage route on the way to Fort Bowie and saw the old stage depot at the fort.

*****O*****

We made an inspection trip down to Tumacacori yesterday and it certainly was a pleasure to see how the new administration and museum building was materializing. We have a fine contractor on that job, and a good inspector and they are both trying to make a good job of it. -- F. P.

*****O*****

EL MORRO

By Jimmie Brewer,
roving ranger.

VISITORS AND CONTACTS

Four hundred twenty five guests registered at El Morro in September, 1937, comparing favorably with 1936 when four hundred twenty three guests registered. States were represented as follows: N. Mex., Okla., Tex., Ariz., Colo., Mo., Calif., N. Y., Ohio, Mass., Ind., Ill., Ark., Minn., N. J., Neb., Utah, Kan., Iowa, Wis., and W. Va.

Three hundred thirty three visitors were contacted with field talks of some kind, either at the ranger cabin during the Sunday rush or with an escorted trail trip.

On September 18, a Gallup troop of 18 Girl Scouts camped overnight. We held a campfire meeting at which Sallie talked about modern Indians and told the story of Bosque Redondo, and the ranger talked about Indian food stuffs and the many uses to which yucca has been put.

WEATHER

As this rolls out of the typewriter, a light rain is falling; the second in two days.

Bud reported much dry weather last month, but sometime between Bud's latest report and our arrival (September 8) the Monument road

EL MORRO (CONT.)

got under a pretty good shower.

The fine folks around us are looking for an early winter.

MORE ABOUT THE WATER

No run-off has thinned Bud's "Wildlife Broth" as yet.

Boss, this water (?) just isn't fit to run under a good bridge. Even the frogs are dying in it!

We haul our drinking water from the Airport (four miles) and find it mighty good water.

(There's one of those strange twists of justice here: El Morro attracts four or five hundred citizens a month and can't offer them a safe drink, but at the Emergency Airport, where they don't get four or five visitors in a hundred months, there is plenty of fine water. And we're both children of the same great White Father in Washington!)

EQUIPMENT

Bud and I moved the refrigerator into the Blue Room on the tenth. It's been working nicely ever since. It's not hooked up yet but by leaving it open at night and closed by day, it keeps things fresh. We're waiting advice from your office regarding assembly parts for installation.

IMPROVEMENTS

Upon the request of the mailman, we moved the mailbox from its juniper posts on the old road to what we think is a right pretty masonry pedestal on the new road. It is build low, in keeping with the current trend, but it would take a mighty good snow drift to bury it. (The mailman says, "Anyway, I'll know where to dig for it.")

A new garbage pit.

A new "IN" sign at turn-around.

A replacement of protection sign on the cabin directly above the register.

GENERAL

We are glad to see another issue of the Broadcast come out of your office.

There's been a great change in the weather here in our brief two

weeks. When we arrived, it was just what you expected we would find: big white clouds scraping their bottoms on the Rock and doing great stunts for color film; but the last week we've been continually threatened by rain and getting thin drizzles from completely over-cast skies. But there's a nice October snap in the air and soon the oak leaves will be doing their stuff. (Coolidge papers please copy).

Also in the Broadcast you mention similiarities in Bud's and Zeke's water supply, but fail to mention Zeke's quarter-mile "jackass", which makes some difference, don't you think?

El Morro and Natural Bridges have other likenesses: life zone, color, same Navajo Sandstone; but the trail to Zeke's ruin has a tree the likes of which El Morro would take pride in possessing. (Guess there's some bridges or something up there, too.)

Some other time I'd like to tell you all about my visitor here who said: "These inscriptions are all too thin--if people could of wrote like that 300 years ago, they'd of had radios and electric lights--too thin, brother, too thin for me."

When we arrived, Bud had everything shined up and a new coat of paint on the "Welcome" mat, so we moved right in and we're finding it mighty nice to be alive at El Morro.

*****O*****

Somebody around headquarters wanted to know how a Roving Ranger comes to set himself up as a judge of good water anyway? That country he covers doesn't give anyone much education along such lines.

Very likely those frogs he speaks of are some of our desert frogs that have wandered up out of the low country and they simply drown when they get into that much water.

Seriously, we are going to have to do something about a water supply at El Morro. The lack of rains this year has emphasized what is always a bad situation.

Headquarters finally located a spare reducing valve and shipped it to Jimmie so the gas can be connected to the refrigerator. Lucky we found it too, for a new one costs twenty dollars and with the new set-up for this year, that is a fortune.--F. P.

*****O*****

WALNUT CANYON

By Paul Beaubien, Junior
park archeologist.

One thousand two hundred fifty nine visitors registered from
SOUTHWESTERN MONUMENTS 175 MONTHLY REPORT FOR SEPTEMBER, 1937.

Arizona Archeological Center Library

WALNUT CANYON (CONT.)

October 1, 1936, to September 30, 1937. Many visitors do not register and I estimate that another five per cent, or 513, visited the monument.

Of the 1,465 visitors to register this month, 1,130 are listed as educational contacts.

PARK SERVICE VISITORS

Park Service Visitors were: Tommy Onstott, F. E. Stonehocker, and J. H. Tovrea. Tommy came by Walnut on his way south and stopped long enough to extricate a visitor's car from a mud hole on the east entrance road. Tov. was making an inspection trip to Petrified Forest, and I accompanied him in order to see the monument to which I have been directing visitors for several summers. Gene arrived early one a. m. to take two old cars to headquarters. Late in the afternoon he had them moved about twelve miles. If he got them down Yarnell Hill, I don't expect to see them again in northern Arizona.

GENERAL

The new pickup arrived just after the last monthly report was written. Each day I spend a few minutes just admiring it, but I suppose, in time, I'll get used to having it around.

The Museum of Northern Arizona has a staff meeting at 4:00 p. m. each Tuesday. David Jones and I have a standing invitation to attend. I have been to the last three meetings, and learned a few things about Walnut Canyon that I had never before suspected. Probably the culture here was a mixture of older cultures, to which the Pueblo Indians had contributed but little. Thus, a museum for Walnut should tell a different story than one at Aztec, Bandelier, etc. I am sure that any museum plans must be discussed with Dr. Harold S. Colton, Director of the Museum of Northern Arizona, before being approved. In that regard, Dale King's dig at Nalakihi was very important, and his final report is eagerly awaited.

NATURE NOTES

For nature notes, I can add a few words about Mearns Woodpeckers. During other summers, a few have nested in the vicinity of the ranger station, but this year they have been conspicuous in their absence. However, one was seen September 11, and there are now about one dozen watering at the bird bath. There is a good acorn crop this year.

*****O*****

For Paul's information, Gene brought the cars in all right, but has not yet had time to work on them. Take good care of that new pickup, Paul, for if anything goes wrong with it and we have to bring it in for

repairs, Gene says you will have to use one of these old cars as a replacement while he works on yours.

That is interesting information Paul gives on the Walnut Canyon people. We fully agree with Paul that Dr. Colton and the Museum staff must sit in with us in the development of the museum at Walnut Canyon.--F. P.

*****O*****

GRAN QUIVIRA

By George L. Boundey,
custodian.

VISITORS

Visitors for the month of September, 450.

WEATHER

This has been a month of much rain, in fact, the hardest rains I have seen in New Mexico. Rainy weather always means a big drop in number of visitors as our roads are the kind that discourage. We had heavy rains yesterday but dust, evidently from the "dust bowl" to the north and east, is now filling the air so that objects but a short distance away are invisible.

The heaviest snow of last year was on September 26, but the rattlesnakes did not come in to hibernate until late in October. A great many of the snakes started coming in this year on September 7, and, though only fools and newcomers predict weather in this country, I say we are to have an early cold winter.

GENERAL

The walls of the mission and monestary have suffered quite a bit from the rains. Nothing but recapping of the walls can prevent this. Road crews are at work on both the Corona and Carrizozo roads. Neither one could make up its mind to do much until the other started and now it looks as though we are to have two real roads, one from the east and the other from the south.

I put in a full day scraping the approach road and it is now in good shape to shed water. Have also built and completed the temporary garage. It is weather proof and did not leak a drop in the heavy rains of the past week. I located the building where Landscape Architect Ritchie suggested, and it can not be seen from any approach.

NEWSWORTHY VISITORS

We have had more than a dozen important visitors from state and

GRAN QUIVIRA (CONT.)

government projects. The governor was down inspecting roads in the vicinity and Paul A. F. Walter, author of "The Cities that Died of Fear", were also visitors at the Monument.

NATURE NOTES

Twice this summer wild turkeys have been sighted on the monument. They evidently drift in from the mountains to the east of us.

*****O*****

Later word tells us that Mr. and Mrs. Boundey have gone on annual leave and will probably be away six weeks or more. We are glad to hear of the road work which is going on in that part of the country, for it is very much needed.--F. P.

*****O*****

CASA GRANDE

By J. Donald Erskine,
park ranger.

WEATHER STATISTICS

Maximum temperature-	- - - - -	-107°
Minimum temperature-	- - - - -	66°
Mean maximum temperature	- - - - -	-102.6°
Mean minimum temperature	- - - - -	72.3°
Clear days	- - - - -	20
Cloudy days-	- - - - -	0
Partly cloudy days	- - - - -	11
Precipitation-	- - - - -	2.28 inches.

September has shown weather considerably warmer than normal as one can plainly see by noting the mean maximum and mean minimum temperatures for the month. During the report period, there were only four days on which the temperature did not go above 100 degrees, and the lowest maximum temperature was only 95 degrees. The last few days, however, have shown signs that perhaps our extreme heat is about over, for which we are all very grateful.

GENERAL

With the continued hot weather, our visitor count did not increase this month as was expected. In fact, it was only 83 ahead of last month and considerably under the count for September, 1936. However, with this the last report for the travel year, our year's total travel does show an increase over other years reaching what is believed to be a record year, with 33,661 visitors. Other years have shown a greater count, but the increase in past years which exceeded this has been due to the Casa Grande Pageant which is no longer held and which has been responsible

CASA GRANDE (CONT.)

for adding as high as 10,000 to our travel figures. Only for the last eight months have we been attempting to check on all visitors not contacted, so for the first four month of the season there were many undoubtedly who were not counted. I feel confident that our total travel actually went above 34,000.

Visitors during the past month have come from 38 states, District of Columbia, and four foreign countries (Canada, Mexico, England, and Brazil). The figures show a little more than half of our total travel was from Arizona with other states following in the order of California, Oklahoma, and Texas.

Custodian Bicknell started his annual leave on September 11 and will not return to duty until October 14. Al is planning on seeing Carlsbad Caverns enroute to Yellowstone to renew acquaintances with his old friends there, and then to Long Beach, California, for a week or so before returning to the monument.

Ranger Erskine had to take several days sick leave due to an infected foot, and members of the naturalist staff served as relief rangers during his absence.

USE OF MONUMENT FACILITIES BY THE PUBLIC

Total travel: 1937--1887; 1936--2045; 1935--1691; 1934--1429.

Of the 1887 visitors to the monument, 1641 were contacted on trips through either the ruins or the museum, or both. 7972 minutes were spent guiding 232 parties through the ruins for an average time of 34.4 minutes. 2832 minutes were spent guiding 135 parties through the museum for an average time of 20.9 minutes. The figures this month will show a much smaller total percentage of contact than normal, due to Bicknell being on leave and Erskine being sick for a few days, and thus guide service being on a makeshift basis.

Two overnight trailer parties stopped on the monument during the month. It has seemed to the writer, by casual observation, that fewer picnic parties used our facilities this month than during most months. Perhaps the opening of school has a bearing on that.

NEWSWORTHY VISITORS

National Park Service visitors for Headquarters included: George Keller, CCC travelling mechanic; State CCC Inspector Haile; Bob Harris and Lewis McKinney of Chaco Canyon; Regional Officer Herb Maier; Resident Landscape Architect Clinton Rose; Bill Stevenson, project superintendent at Chiricahua National Monument; Aaron L. Citron, state park procurement officer; and Captain Halff, U. S. Army, executive officer, Phoenix District, CCC.

CASA GRANDE (CONT.)

Newsworthy visitors to the monument included Dr. Emil Haury of the University of Arizona; Dr. Pope of the Department of Agriculture; and Dr. S. B. Laughlin, professor of sociology and anthropology at Willamette University, Salem, Oregon.

IMPROVEMENTS

During the month, the kitchen of the chief clerk's residence was improved with the laying of new linoleum and the replacement of the old gas range with an electric range. At the same time, the kitchen was painted with water-proof paint. The work was done by Gene Stonehocker, mechanic.

During the month, additional publications for the monument library were received from the following sources: Arizona Bureau of Mines, University of Arizona, United States Geological Survey, and the National Park Service.

NATURE NOTES

Several Say Phoebes can be seen flying about the ruins every day. Also, several Rock Wrens have put in their appearance. Many flocks of birds have been noted heading south. In the Casa Grande our pair of Western Horned Owls continue to fascinate visitors. Many bats are present in the Casa Grande, although there are not as many as last year at this time.

Western Whipsnakes and Arizona Gopher Snakes continue to climb around the Casa Grande, but no rattlesnakes have been seen during the month.

Park Naturalist Dale King found a Western Horned Owl beside the highway one night a week or so ago with a broken wing, and he and Junior Naturalist Natt Dodge are trying to nurse it back to health, keeping it in one of the large bird traps.

*****O*****

Note from Don's report that we had some warm weather at Headquarters in September. An average of 102.6 means a flock of 105 degree days. However, it won't last much longer before the fall and winter weather will be upon us and then we will have the laugh on these boys in the high places until next May.--F. P.

*****O*****

CHIRICAHUA CCC

By William Stevenson,
project superintendent.

CHIRICAHUA CCC (CONT.)

Rock, was completed on September 3. This marked the completion of our horse-trail project. This project was started by Project Superintendent Hammond in the Third Enrollment Period, 1934. Eleven and two tenths miles of horse trails and .074 miles of foot trails make up the present trail system.

One half mile of trail has been maintained in upper Rhyolite Canyon and Big Balanced Rock--Sara Deming Sections. Trail sections were resurfaced and additional drainage provided.

Two crews worked on the backsloping project until September 11, when it was necessary to cut to one crew, due to shortage of men. One hundred square yards of banks were sloped one half mile above Bonita Park and the materials were used for surfacing. Two hundred square yards of banks were sloped in the rock cut sections one mile above Bonita Park and the materials were used in widening fill slopes.

One quarter mile of Bonita Highway was surfaced and a few small slides, which occurred in the early part of the month, were cleared. Ditches and culvert basins were cleaned in the vicinity of Massai Point.

Rock work on the administration building is complete. The roof is complete except for rear porch and preparations are being made to start plastering.

Footings were poured for the employee's residence, and forms are being placed for basement walls.

Excavation for sewer extension to employee's residence is complete.

*****O*****

Bill, you would have enjoyed hearing Hugh Miller report on your work when he came in from the last trip down there. He says he will back your trails against those in any park in the National Park system. He says you fellows several times tried to point out across the canyons where you had made a slip and exposed a bit of trail, and you couldn't point it out so he could see it. He says it is remarkable the way you tucked those trails around those hills and canyons without any scars.

*****O*****

CHIRICAHUA

By William Stevenson,
project superintendent.

In the absence of Custodian Fish, who is spending a month of annual leave in northern New Mexico, I submit the following report for September:

CHIRICAHUA (CONT.)

TRAVEL STATISTICS

Visitors: - - - - - 1,076; Sept., 1936, 709.
 Arizona - - - - - 827
 Total States (incl. Washington, D. C.) 27
 Foreign countries - - - - - 1 (Canada)
 Total Cars - - - - - 234

Contacts: - - - - - 583
 Trips - - - - - 81
 Total trip time - - - - - 3,963 minutes.

WEATHER

The estimated mean maximum temperature for the month is 80 degrees and the mean minimum 55 degrees. Days cloudy--14, days partly cloudy--5, days clear--12.

Daily rains occurred in the Monument August 23 to September 10. Rains have been spotted this season and some of our neighbors in the Sulphur Springs Valley, who are less fortunately situated, have had to move cattle due to water shortage.

ROADS

Approach Roads:

Surveys have been completed for that section of the Stein's Pass Highway from Benson to Willcox. Two routes have been proposed. The Texas Canyon route starts at Benson, passes through Texas Canyon, then passes north of the Triangle T guest ranch and enters Willcox from north of the Dry Lake, a distance of 34.5 miles. The Saint David route leaves Highway 80 at Saint David, continues northeast to Dragoon Pass, then to Cochise and then parallels the railroad to Willcox, a distance of 41 miles. It is planned that the route chosen will be constructed as a Federal Aid Project.

The several culverts which were washed out by August rains on the Pinery Canyon road are to be replaced by bridges. The Forest Service has a crew doing the preliminary work now, and materials have been purchased for construction. Detours have been built and the road will be kept open for travel.

Work is progressing on the road between Bisbee and El Frieda. Seven miles now remain to be oiled.

The Willcox Monument Road is now completed to a point one mile east of Dos Cabezos.

Park Roads

Park roads and trails have been in good condition all month.

CHIRICAHUA (CONT.)

NATIONAL PARK SERVICE VISITORS

September 5, 6, and 7--Custodian and Mrs. Caywood and Fred Nichols, architect, Tumacacori National Monument.

September 15--George Keller, CCC travelling mechanic.

September 17--J. H. Tovrea, assistant engineer.

September 19--J. H. Haile, CCC inspector.

September 20--Hugh M. Miller, assistant superintendent, Southwestern Monuments.

OTHER NEWSWORTHY VISITORS

September 5--C. Wayne Clampitt, United States commissioner, Tucson, Arizona.

September 7--W. H. Aitken, junior architect, Denver Mountain Parks.

September 9--Fred Winn, forest supervisor, Coronado National Forest.

CO-OPERATION WITH OTHER AGENCIES

Educational movies of the National Parks and Monuments are being received weekly from the Washington Office and are being turned over to Mr. Beatty, CCC Educational Advisor, for Camp programs. The following pictures have been shown since August 27: Carlsbad Caverns; Yosemite National Park; Glacier National Park; Rocky Mountain National Park; Death Valley; Grand Canyon; Glimpses from Texas; White Sands; and Emergency Conservation Work in the Great Smokies.

Mr. Beatty reports a camp attendance of 70 percent.

ACQUISITIONS

A book on forage grasses and plants was received from the Washington Office during September.

GENERAL

Eliga Alton, CCC enrollee, was chosen by the custodian to aid in contact and guide work during the custodian's absence.

Alton will replace Bronson Harris October 1, as Harris is not re-enrolling.

*****O*****

Many thanks are due Project Superintendent Stevenson for taking over the duties and making the report for Custodian Fish while the custodian was on his annual leave. Thanks, Bill, and we will try to square it up with you somehow.--F. P.

*****O*****

AZTEC

By T. C. Miller,
custodian.

GENERAL

September 23, and it seems such a very short time since we sent in the August report. Again we record "History for the Aztec Ruins". Junior Archeologist Steen arrived on September 2, and work began on that date on the installation of Aztec Ruins exhibits in the new cases. This work was completed and Charlie departed on September 14. Our museum now presents a neater appearance than ever before; artifacts are arranged in logical order by cultural periods. However, with all due respects to Charlie and his work, our trips are shortened through the museum and through the ruins. The trip is made in such a short time the visitor is finished and gone before we know it. This new set up will certainly help us in handling the big summer crowds, but we are asked daily: "What did you do with all of those fine artifacts that you had stored or displayed in the ruins?". I know Charlie's line up is better for the archeologist, but we think it is a crime to deprive the dudes of seeing several hundred pieces of pottery scattered all over the place. Any way, we can say that Charlie worked hard and left a fine looking job behind when he installed the exhibits in this monument.

ROADS

Our approach road has remained in good shape all the month with maintenance performed by the State Highway Department. We were told by the Highway Department that our road is to be graveled when the road from Aztec to Farmington is graveled. The crusher is now set up, and this work will start within the next few days. Highway U. S. 550 from Aztec to the Colorado state line is now being treated with a new seal coat of oil. From the state line to Durango the road is now oiled, so we are getting some real roads around this monument. The next summer's travel should set a high mark in the way of travel and almost 100 percent educational contacts.

MONUMENT INSPECTIONS

Two trips were made to Chaco during the month, one on August 25 and the other on September 21. Yucca House was inspected with Jimmy Brewer on August 30. Jimmy had the gates all wired up and a stile

AZTEC RUINS (CONT.)

built over the fence so visitors can enter the monument, and the gates cannot be left open for stock to enter. After inspecting Yucca House, the Ismay's treated us to a big chicken dinner, with all the trimmings. We then drove the Aztec Ruins pickup to Ackman where we spent the night. Early on the morning of August 31, Assistant Superintendent Miller met us and the entire day was spent inspecting the different groups of ruins in the Hovenweep National Monument. Jimmy has gained much knowledge of these ruins and the many problems involved in that monument. Boss, be sure to have that roving ranger put all that information on paper. Jimmy has put in a lot of time and hard work there and I believe Jimmy would do to ride the river with. Hugh and I found him to be a good camper and an interesting guide.

TRAVEL AND GUIDE SERVICE

Labor day, with the end of many vacations and the opening of schools, saw the end of the peak travel for the year, a year which has set a new travel record for the monument. September itself, however, has not been as good a month as the corresponding period of 1936. Travel statistics follow: Total travel: 1806. Number of field trips: 261. Number of museum trips: 279. Total contacts: 3457. Total not contacted: 23. Number of cars: 500. Our visitors came from 36 states, the District of Columbia, Spain, Panama, and Canada.

In September 1936, 1972 visitors were counted at the monument, while this year, our figure was 1806, a decrease of 66. Totals for the past year, however, have been far better than in 1936. The relative figures are: 9/24/35 to 9/23/36--12,907; 9/24/36 to 9/23/37--14,303. This is an increase of 1,496.

In computing the length of time devoted to field and museum trips, we get some interesting figures which at first might cause some question. A decided drop is seen in the duration of field trips. This is the result of the changes made in the ruins exhibits during the past month. With removal of the cases and most of the artifacts from the ruins, we find that ten to fifteen minutes is cut off the time required for the trip. This is because the artifacts are no longer explained there. Next month's figure will give a more accurate figure for the average time, since the change was made about the middle of the month and both long and short trips have been averaged this month.

It is expected that with the eight new museum cases now installed, the museum time should increase, but the present month shows no change over August.

Travel from September 24 to September 30 inclusive will be transmitted to your office by wire, at the end of the month.

AZTEC RUINS (CONT.)

WEATHER STATISTICS

Maximum temperature- - - - - - - - - -89
Minimum temperature- - - - - - - - - -42
Precipitation- - - - - - - - - - -.44 inch.
Clear days - - - - - - - - - -17
Partly cloudy- - - - - - - - - -11
Cloudy - - - - - - - - - -3
Greatest precipitation in 24 hours - - -.12 inch.

NATIONAL PARK SERVICE OFFICERS

Erik Reed, C. C. C., Santa Fe, August 24. Cy Harkins, custodian, Bandelier National Monument, Jimmy Brewer, roving ranger, and Dr. Charles N. Gould were here on August 28. Homer Hastings, ranger, Chaco Canyon National Monument, September 1. Charlie Steen arrived on September 2 and departed on September 14. Myrl Walker, Petrified Forest, and his family were monument visitors September 5. Ben Thompson, assistant director, Washington, D. C., September 7. Lewis McKinney, custodian, Chaco Canyon National Monument, September 11. James G. Allen, Mesa Verde National Park, September 22.

SPECIAL VISITORS

George P. Murdock, Yale University, August 30. F. H. Douglas, Denver Art Museum, August 30. J. Frank Dobie, University of Texas, August 31. James H. Breasted Jr., Colorado College, September 9. Paul S. Martin, Field Museum, Chicago, September 22.

*****O*****

We are very glad to have the kick from Carrol regarding the installation of the new museum room. There is nothing hard and fast about these installations the boys are putting in and we should keep our eyes open for improvements. I don't think we should take the first month at Aztec after the change as proving the problem one way or the other. I have given the boys three months at Casa Grande to get used to the new arrangement and develop the talk to fit it, then if we can't hold the visitor longer than we did in the old arrangement, it will be time to hold a bull session and see what we do next. If the time is shortened, I shall consider we have failed. If the time remains the same, I shall consider we have the extra safety of the glass cases. I am aware this is a somewhat arbitrary way of settling it; I am aware of the possible argument that one might re-arrange a museum so people will leave sooner and learn more, but, until we find some other way of guaging interest which seems better, I am going to say that the length of stay of your visitors in your museum is the measure of their interest.--F. P.

MONTEZUMA CASTLE

By Earl Jackson,
custodian.

STATISTICAL

Visitors:- - - - - 1239; Sept., 1936, 1234.
Arizona visitors by cars - - - - - 713 (57.54% of total)
California visitors by cars- - - - - 274
Texas visitors by cars - - - - - 37
Total states (incl. Washington, D. C.) - 36
Foreign countries- - - - - 1 (Japan)
Conveyance:
Cars - - - - - 337
Arizona cars - - - - - 180
Motorcycles- - - - - 1
Horseback- - - - - 3
On foot- - - - - 2
Contacts:
Trips- - - - - 223
Attendance - - - - - 853
Those who climbed ladders- - - - - 709 (57.22% of total)
Average trip time- - - - - 38.11 minutes
Museum lectures- - - - - 190
Attendance - - - - - 714
Average museum time- - - - - 17.01 minutes.

WEATHER AND ROADS

Weather has remained unusually dry capping the driest summer the custodian has seen in nearly 20 years in Arizona. Precipitation was .18 inch occurring on September 12, 20, and 23. Twelve days were partly cloudy and three were cloudy.

Valley roads are in good condition save for some corrugation between Camp Verde and Cottonwood. Construction on Highway 79 between Jerome and Prescott is completed.

People complain of difficulty in finding roads in the valley. There have never been enough signs and some of those that have existed in years past have been torn down. I am pleased to report that an order for metal signs giving directions to this monument has been placed.

SPECIAL VISITORS

Park Service:

September 7--Tom Onstott, ranger at Tonto, paid a brief visit.

September 23--J. H. Tovrea, assistant engineer, was with

MONTEZUMA CASTLE (CONT.)

us for two hours, in which time he inspected dangerous ledges and outlined projected work on repair to the revetment wall.

Other Visitors:

August 26--Ray J. Bradshaw, scoutmaster, Troops 13 and 17, Tucson District, Catalina Council, Boy Scouts of America, was in with 15 quite interested Boy Scouts.

August 27--Colonel Edgar A. Myer of the Headquarters Staff, Eighth Corps Area, National Guard, was a visitor.

September 1--Charles M. Morgan, executive secretary, the Arizona Cuarto Centennial Celebration, was an interested visitor from Phoenix.

September 6--W. F. Barbat, a paleontologist with Standard Oil from Taft, California, was a very interested visitor.

September 7--Mr. and Mrs. Earl Barnett of Burbank, California, were very interested visitors.

September 15--Ned Spicer dropped in of a sudden and spent the afternoon and one night with us. Needless to say, a very enjoyable bull session was had between the Jennings, Mr. Spicer, and the Jacksons.

CONSTRUCTION

Two additional warning signs were made and posted at trail approaches to the lower ruins where visitors are allowed to wander unchaperoned.

Two soap dispensers were installed in the comfort station.

Construction of a standard fire place was begun on the picnic grounds.

Movable standards for unsightly gasoline drums were made.

DONATIONS

Earl Barnett of Burbank, California, donated a five pound jar of calcium chloride to the museum to be used for drying of specimens; specifically to help our mummy, which has been "sweating."

ACTS OF GOD (How would you label it?)

On September 8 a section of about three cubic feet of rock fell from the under side of the ledge which supports the second ladder leading into the Castle. Fortunately, nobody was near at the time. The rock fell directly onto a lower ledge where people have to walk.

Another weak section of ledge was noted just above where the

MONTEZUMA CASTLE (CONT.)

piece had broken loose.

This matter was taken up through the regular channels.

NATURE NOTES

On August 28 an exceptionally large centipede was captured in the museum room. The specimen measured about six inches in length. It was put in alcohol, and very quickly changed color. Alcohol has been found very unsatisfactory for preserving specimens here as it is impossible to preserve the original color in such a medium.

On August 29 another porcupine was seen just off the monument boundary. It was so late in the evening we could not determine the species.

On September 3 a camper killed a 45 inch black-tailed Rattlesnake near where his four small children were playing. The specimen had seven rattles and a button. This variety (*Crotalus molossus*) is considered rather rare this far north as its principle range is the southern part of the state and along the Mexican border.

On September 7 a small King Snake, (*Ophibolus getulus boylii*) was seen crawling along the edge of the wall of the comfort station.

On September 13 Betty and I captured a large specimen of the Western Diamond Back Rattlesnake (*Crotalus atrox*) off the boundary of the monument. This individual will be made into a museum specimen.

On September 12 Jane Jennings saw something which we think is quite unusual. It was a squirrel, believed to be the Rock Squirrel, which swam the creek near their tent-house. After its furious struggle through the water, it climbed up onto a sand-bar and started to dig a hole. It then buried its head in the hole for a moment, then curled its whole body up in the hole and proceeded to kick sand all over its body with its feet. Then it rose and shook itself like a wet dog will, and repeated the burying process. After a final shaking, the squirrel was almost dry and then scampered off into the bushes.

On a number of occasions this month we have heard the high pitched yapping of coyotes over near our eastern boundary.

The other day it was found necessary to go on a cat hunt from which Ranger Jennings emerged victorious with one dead house cat and a deep scratch on his hand.

GENERAL

This month has been quite satisfactory from the custodian's

MONTEZUMA CASTLE (CONT.)

stand point, with one exception. Museum contacts have dropped again in length. It seems almost an impossibility to hold visitors in our cubby-hole museum more than 15 minutes. The only way I know to lengthen museum contacts here is either to tie visitors by means of long ropes in the building for the desired length of time, or to stress the natural history of the place. I am sure you would prefer the latter. So that is what we are going to stress more than ever as a secondary interest to archaeology. We are starting the improvement of our natural history attack by the rattlesnake specimen.

*****O*****

In the matter of the fall of part of the ledge where the ladders go up to the Castle, we have had Mr. Tovrea look over the ground and he thinks he has an engineering solution. Next we will have to get landscape approval, but we are on the way to getting something done.

We are glad to have Earl studying this museum visitor problem. We will predict that he can increase his average museum trip time five minutes with fifteen good specimens and a few illustrations such as the mechanics of the rattlesnake's poison apparatus, etc.

*****O*****

WHITE SANDS

By Tom Charles,
custodian.

GENERAL

The White Sands has been closed most of the month on account of Mr. Underhill's three miles of road construction.

You will remember that he and I agreed that it would be best for us to close the monument for a week; well, that week stretched out over most of the month. But I must admit that "closing" does not mean much at the Great White Sands. The groups who wanted to go into the Sands went anyway. They usually broke through some place along the 12-mile front and little less than a troop of cavalry could have kept them out. So we tried to maintain a detour, but the valley soil is not so good for detours and after a few days, dust pockets developed into which the car would sink unexpectedly and remain there until someone helped it out. We usually waited for a crowd to arrive and then picked it up and set it on firm ground again. There was but little complaint or ill-will, however, and the principal effect was on the number of visitors. But we did pretty well for a closed monument.

Referring to that "Calcutta Pool" on the White Sands count; I wish there were some way to hurry the closing. I'm getting nervous. You evidently noticed that I have been welshing a bit on my bets, for you called the Director's attention to the fact that my August count

WHITE SANDS (CONT.)

dropped over 6000 with no perceptible cause. That drop was no doubt due to the fact that last year I tried to get the number of night visitors who do not register and were never taken into consideration on the original Barrie Mohun count and percentages. There are from 50 to 500 people at the picnic ground every Friday, Saturday, and Sunday night during the summer, and frequently big parties in between. So you can see that if the night crowds were taken into consideration, it would easily make up the 6000 which I was short. I can assure you that I am just as anxious about this count as the boys in the field. But I am intrenching myself slowly, I think.

I have been able to gain one ally among the field boys, at least. The first Sunday that we had the monument closed, Mr. Underhill, the veteran Park Service engineer, promised me a detour around his work for Sunday and Labor day. Saturday night he came in with much gusto, "Got your detour all fixed, signed, flagged, etc., etc. Good for Sunday and Monday", said he. Well, Sunday morning I got out there at 10 o'clock and visitors' cars were getting stuck in the dust all along Underhill's detour. From 1:00 p. m. to 4:00 p. m., the flagman on the project and I both were busy directing traffic. At four we gave it up, took down the signs, threw poles across the detours, and closed the monument. That celebrated two-day detour had lasted about two hours. Underhill insists there were 250 cars out there that day. Ben and I think he counted them both ways. But we all agree that when they are headed for the White Sands, they pay but little attention to freshly oiled road, barricades, or even fences.

So, don't weaken, Boss; I do not know how many visitors we have, but I believe I can get a sworn statement from Underhill that they come in swarms. Last Friday night there were 80 at the picnic ground at one time; Saturday night there were 42 there at 9:30; Sunday there were 72 cars at the picnic ground from 12:00, noon, to 6:00 p. m.; there were 22 cars there when I left at dark, and I met a school party of three bus loads and three car loads going in as I came out.

I do not believe the visitor curve has ever turned down since we opened the highway. This month the 14 miles of paving from Alamogordo to the monument boundary was opened for travel. Twenty five Alamogordo business men went from here to Las Cruces last Friday night to meet with Governor Tingley and he promised us in no uncertain terms that he will finish the remaining 29 miles of road between here and that city. So, with a completed federal highway (No. 70) through the Sands, three miles of beautiful blacktop into the monument, and the most striking headquarters area in the Southwest, just how can that visitor curve go any way but upward?

Mr. Underhill will soon leave us--his project is about finished--but he leaves a monument that will stand for years. It is a beautiful piece of highway.

WHITE SANDS (CONT.)

Life in the Sands the past month has been uneventful. The weather has been delightful. Friendly newspapers have given us much kindly publicity. The Albuquerque Tribune ran a four column story with a three column cut; Alpha Hart, special writer for the Daily Oklahoman writes, "I cannot tell you how well I liked the attraction at your city's border. Although I tried to cover the entire state, I was more impressed with those columns of marching desert than by anything else". Catherine Hauberg entered three White Sands photographs in an exhibit of hiking pictures given by the Black Hawk Hiking Club of Rock Island and Moline, Illinois and Davenport Iowa, and took first and third prizes. They are beautiful pictures. Fred W. Emerson, botanist at the Normal University, Las Vegas, New Mexico, has a fine article on "Uncle Sam's Biggest Sand Pile", in the October issue of Nature Magazine. "Sixty two species (plant life) are much at home in the White Sands", says Dr. Emerson. "The narrow-leafed sand verbena, actually a four-o'clock, is found nowhere else in the world", says the doctor. "It has thick, pale green leaves and lavender flowers". Dr. Emerson further summarizes that the flats between the sand dunes are beautiful with four species of mallows, an evening star, a milk weed, a morning glory, a mustard, several species of cacti, one true verbena, a Gilia and thirteen asters mingled with thirteen species of waving grass. "Let the skeptical lover of the beautiful and unique in nature go and see for himself--he will be well paid for his journey". Dr. Emerson's article covers three full pages and carries six lovely pictures.

The recreational-demonstration project at White Sands is progressing. Johnnie Stevens, who has carried the bulk of the load for the past two years, is now acting project manager. The buildings are all roofed, bids are called for outside plastering material, the parking area has been finished, except for planting, painting, and the beautifying touches of the landscape department. We understand that \$7,000 worth of wall cases for the museum are expected soon. The \$3,000 option on the historic Dog Canyon water has been accepted, and we understand that plans are being made to pipe this mountain water across to the headquarters area, some 14 miles distant. The boys are all on their toes. There is the constant tramp, tramp of progress at the Great White Sands.

The Alamogordo High School band of 92 pieces are making big plans for a Sunday afternoon concert and picnic supper at White Sands on October 24. Every member of this band has a new uniform with orange and black over white trousers. They form one of the best school bands in the state and make an impressive appearance. There will also be special numbers by some of the best band leaders in the state.

Our registration has dropped again this month due, largely, to the fact that the monument was closed most of the month. Scores, possibly hundreds, of cars came to the entrance and were turned back to stop in the dunes along the highway or to return at a later date. There is no way to estimate the number, so I think it best to hold to the Barrie

WHITE SANDS (CONT.)

Mohun percentages, 'though probably low for this month. There were 1,283 registrations which, on the basis of 14 percent registration, gives us 9,164 visitors. They came from 30 states and 7 foreign countries. Texas led with 518, New Mexico had 195, Oklahoma 45, Kansas 29, California 21, Arizona 19, Illinois 18, Missouri 14, Ohio 12, and Colorado 11. Ninety percent of the New Mexico visitors came from distances of 100 miles or more.

*****O*****

My apologies, Tom, if we have expressed too much doubt about your visitor figures. We didn't really have that much, I assure you, and when we get Jim Felton over there on the job, in a month or so we will begin finding out where we stand. Even then it is going to take several months before we get lined up and going strong. On the information as it stands now, I would say we have you too low for your annual figures. I, personally, think you ran over a hundred thousand visitors in this year which has just closed. That, as Jim is going to find out, is a lot of visitors.--F. P.

*****O*****

WHITE SANDS ENTRANCE ROAD By A. E. Underhill, foreman.

There have been crushed and hauled 2,136 cubic yards of surfacing materials; 234 tons of asphaltic binder spread and processed, and compacting is now under way.

This contract should be completed this week, excepting the ten day maintenance which does not begin until the compacting is completed and the shoulders reshaped.

It will require about three days to obliterate temporary roads to meet the approval of the Division of Plans and Designs. The contractor has a list of the work to be done, as outlined by a representative of the landscape department.

The general contractor had difficulty in obtaining the proper equipment to compact the base and the job was closed down on September 10 to get this equipment.

After the base was compacted, the contractor worked 24-hour shifts to complete the crushing and hauling of the surfacing.

*****O*****

NAVAJO

By Milton Wetherill,
ranger in charge.

Received the Ford Pickup the forepart of September, which is the first real happening for the monument. Paul had signed for the **three** cars which were for Walnut, Wupatki, and Navajo, and had taken them out to Walnut Canyon which saved a lot of paper work in Flagstaff.

September has had the feeling of fall weather; the days warm, nights cold. Maximum temperature 90°, minimum 53°. These temperatures were taken from September 7 to 20.

The aspen, box-elder, and dogwood have started to change color, and within the next two weeks there will be plenty of color in this part of the canyon.

Mr. John J. Raskob, of New York City, passed through Kayenta, August 28 on his way to Mesa Verde from Grand Canyon. Other parties of interest were Dr. Ernst Payer, Vienna, Austria; Clare F. Payer, Cambridge, Mass.; Dr. T. G. Orr, M. D., wife, and son (second visit), Kansas City, Mo.; Dr. H. E. Gregory, U. S. Geological Survey, Washington, D. C. with party of eight.

Trails on the monument are in good shape. The trail down the hill from the end of the road has washed quite a bit and a large number of stock have gone over it, leaving it rocky in most places with deep sand in others. The last three quarters of a mile of road are very rough and most parties leave their cars and walk rather than drive over this part of the road. The pickup cannot get up the hills with the governor on it.

*****O*****

Milton's report makes us at headquarters in the low country long for a field trip just about now when the colors are on. How lovely some of those mountain sides are!--F. P.

*****O*****

ARCHES

By Harry Reed, custodian.

During this month there has been a decline in the number of visitors to the Arches. This is due to the poor condition of the temporary road from Highway 450 to the monument. Heavy rains during the last week of August did considerable damage to the road. Most damage occurred in Court House Wash. The current cut into the west bank of the wash, left a three foot jump off. The road has been made passable at this point, but still presents a problem to those unaccustomed to driving in deep sand. At other points along the route small sand dunes have formed which make for difficult driving. To my knowledge, however, only two parties have turned back because of the poor condition of the road.

ARCHES (CONT.)

These were parties who tried to go in alone.

The new signs brought up and erected by Jimmy Brewer have been a great help. Anyone going into the monument for the first time has no trouble whatever in finding the way. The sign at Willow Spring is of special value as it not only points the way to water, but gives those unfamiliar with the area assurance that they are on the right road.

On September 6, 17 members of the Wasatch Mountain Club of Salt Lake City made the trip into the arches. They were under the leadership of Francis C. Bromley. All members of the party were greatly pleased with the monument and many expressed intentions of returning later this season. In addition to the members of the club, we had with us J. H. McGibbeny of the Salt Lake City Chamber of Commerce who made a great number of natural color photographs in the form of lantern slides and motion pictures to be used by the advertising committee throughout Utah and neighboring states.

Dr. Williams has conducted a number of individuals as well as small parties through the monument. Recently his two daughters from San Francisco made the trip and, needless to say, they too were delighted with the arches.

PARK SERVICE OFFICIALS

Ben H. Thompson of Washington, D. C., assistant director, and Russell K. Grater, wildlife technician from the Denver office, arrived in Moab where they were met by Hugh M. Miller of Coolidge, Arizona, assistant superintendent of Southwestern Monuments. As it was late afternoon of Sunday, August 29, the party waited until the following morning to make the trip to the arches. Trips were made to both the Windows and Devil's Garden sections of the monument. On Tuesday, a trip was made to the "Big Flat" country west of Moab to have a look at the Colorado River Canyon. Hugh promised to return sometime to have a better look at the Devil's Garden area which is much too large to see in one day.

*****O*****

Harry is a new man on our force and this is the first monthly report we have had from him. It is a good report and we will look forward to more of them in future months.

The cut in our funds to balance the budget will preclude our starting anything out of the regular appropriation at Arches this year, but we will try to work up a master plan and have everything ready if by any chance we might be able to share in some of the emergency funds.--F. P.

*****O*****

TONTO

By Thomas B. Onstott,
ranger in charge.

This month probably hits a new all-time low in guided parties as the last ten days have been confined to road work. However, all the visitors were contacted on the road with the exception of the few who came up while I was at the gravel pit. I rather imagine that the looks of the road scared off several prospective parties as it is definitely in the worst state of repair of its somewhat notorious career. If good luck and weather hold on for us, we should have a slightly more presentable approach by November 1.

Arizona Motor Tours is going to run an eleven passenger bus over the Apache Trail daily as soon as the winter tourists start pouring in. This in itself will boost the season's tally considerably. It will also mean more maintenance on the road, for a bus will really work havoc with the temporary repairs. However, the time to worry about that is when the temporary repairs are through.

VISITOR STATISTICS

Total registered visitors- - - - -	277
Total people guided to ruins - - - - -	184
Total parties guided to ruins- - - - -	48
Total time guided in ruins - - - - -	-2,462 minutes.
Average number people in party - - - - -	3.8
Average time per party - - - - -	51.3 minutes.
Total people guided in museum- - - - -	202
Total parties guided in museum - - - - -	47
Total time guided in museum- - - - -	635 minutes.
Average number of people in party- - - - -	4.3
Average time per party - - - - -	13.5 minutes.

After November 1, I am sure that there will be some much more impressive figures to hand in.

*****O*****

Attention of the Washington Office should again be called to this bad piece of entrance road at Tonto. We asked for and obtained an addition to the area so all this entrance road would be on our monument and we could do something about it. We have been told that the roads and trails money was cut this year to the point of excluding any funds either for the rehabilitation of this road or the construction of another on the proper alignment.--F. P.

*****O*****

ROVING RANGER

By James W. Brewer, Jr.,
roving ranger.

It's not flowing freely and I'm not going to pump it very hard: as per telegraphic instructions, I went to Mesa Verde on the 29th to meet K. B. Disher, museum technician, from the Washington Office. On the Mesa, I found telegraphic orders to go to Shiprock to meet Ken. Meeting Ken at Shiprock, we took in Aztec on the way to Mesa Verde. Ken and Cal had a long museum session and we arrived at Mesa Verde at 12:30 a. m.

Ken spent the next day with the museum experts on the Mesa and the next day I drove him to Chaco Canyon.

I doubled back to the Mesa and picked up the signs for Arches National Monument and on to Moab.

With the help of Harry Reed and Boyd Jorgensen, the directional signs were installed on the 4th. Photographic negatives were forwarded to your office showing the location of the signs. Unfortunately, the entrance road turn-off sign came thru single-faced. I returned to Hovenweep which is still deserving its "Deserted Valley" name. Six consecutive days passed without sight of a human being.

I am worried about the fall season and invasion of the sheep. No one else seems to be able to find the Hovenweep.

I made another trip to the Arches on the 21st and 22nd. Was very sorry to learn, as I was leaving Moab, that Mrs. Zeke Johnson was in the Moab hospital.

I returned to Hovenweep to learn that a Texas car had been in during my absence.

*****O*****

This is a short report covering the close of the work around Hovenweep and Arches. The Roving Ranger was then detailed to El Morro to relieve Mr. Budlong who wanted to go on annual leave before heavy winter set in.--F. P.

*****O*****

CAPULIN MOUNTAIN

By Homer J. Farr,
custodian.

There have been approximately five thousand visitors this month, although this is just a guess, for I have had less time this month to give to the monument than I have had for many moons. I have been pretty busy getting my hay put up, as hands are rather scarce and I had to do most of the work myself. This coming month, I will have plenty of time to give to the monument and hope to be able to get the road

CAPULIN MOUNTAIN (CONT.)

straightened out, fire hazards removed, and winter fence repaired.

Weather has been mighty fine all month with no frost as yet. However, we don't expect to get by much longer without heavy frost as our thermometer stands around 37° every morning. We have had two or three fine rains this month and the country in general around Capulin looks grand, with better grass than we have had for ten years; but crops are short on account of rains coming late in the summer.

I have had considerable correspondence concerning the accessibility of this monument from the various highways, and I am now writing an article for the Conoco Travel Bureau which will explain the roads, trails, and camping facilities for cars, trucks, and trailers. This information the Bureau has requested in a letter, and I presume the word I give them will be incorporated in the travelogue for the coming year.

Among many welcome visitors was Mr. Luther, chief clerk from the Coolidge office who made us a very pleasant call on or about the eighth. It was his first visit to our monument. He seemed to like it and I found him to be a very likeable fellow. Forester Wirt from the Oklahoma City Office, Wildlife Technician Borrell, and Forester Yeager from the Santa Fe office were mighty welcome visitors, all of whom gave our monument a thorough inspection and made a splendid report recommending many much-needed things which we hope to get. Thank you, gentlemen, and come again when you can.

I am still hoping and expecting to get some retaining wall built this fall to prevent the winter ravel of side walls into the road.

*****O*****

It is too bad that we could get no real road money at Capulin this year. The upper part of the road continues to ravel down while we stand around and expert it and talk about it and nothing gets done. We thought we had something on the way this year, but the road budget seems to be too small to allow any real work, so the situation may have to continue for another year before anything can be done about it.--F. P.

*****O*****

WUPATKI

By David J. Jones,
ranger in charge.

VISITORS

Visitor travel to Wupatki has dropped about 17 percent from what it was last month. Two hundred twenty seven visitors registered at the Citadel; one hundred sixty nine at Wupatki, forty eight of these having visited both the Citadel and Wupatki brings the total down to three hundred forty six for the month as compared to three hundred twenty nine

WUPATEKI (CONT.)

in 1936.

Of the 27 states represented, California leads, with a total of 120 visitors, while Arizona comes next with 84. The only foreign visitor was from Belgium.

When oiling of Highway 89 was begun, I predicted a decrease in visitor travel as compared to last year. I was wrong, but 70 percent of the visitors came in before the ninth. According to this, we should have had a greater number of visitors. Shall we blame it on the Highway Commission, or the annual decrease in the fall?

NEWSWORTHY VISITORS

On August 26, Dr. and Mrs. Colton brought out F. H. Douglass of the Denver Art Museum. Mr. Douglass is trying to unravel the early history of silver making among the Navajos. He wanted to see Peshlakai Etsedi who was one of the first silversmiths. In spite of his 87 years, Peshlakai has a good memory and furnished Mr. Douglass with valuable information.

Lynn Hargrave on the 15th. was in for a short visit. Met Tovrea in Flagstaff on the 22nd, but could not persuade him to come out.

WEATHER

Maximum temperature-	- - - - -	-90°
Minimum temperature-	- - - - -	-54°
Average maximum-	- - - - -	-85.7°
Average minimum-	- - - - -	-60.5°
Precipitation-	- - - - -	1.4 inches.
Anemometer -	- - - - -	-3213.4 miles
since September 1.		
Maximum 24-hour reading-	- - - - -	-210.6 miles.
Minimum 24-hour reading-	- - - - -	93.7 miles.

In general we have had good weather this month. It is warmer than last year at this time and the rainfall is about the same, but the range is in bad condition with feed in localized areas only. Clyde Peshlakai blames this upon the T. W. A. planes which pass over every day on the newly established Winslow-Salt Lake City route. He says they scare away the rain birds.

ROADS

Roads into the monument are passable, the best entrance being through Sunset Crater. A scraper would certainly improve the roads by taking out the washboards.

WUPATKI (CONT.)

MAINTENANCE AND IMPROVEMENTS

I received a new Ford pickup on August 31. It has already been baptized by being stuck in the cinders for five hours.

The mail box has been put up at entrance on Highway 89. Please bring in the mail when you come.

Protection for the exposed burial exhibit in Room 7, Wupatki, has been completed. It consists of a wooden frame with a lid which, I hope, will afford some protection from the rain and snow.

I spent six days repairing the road and taking out the rocks. On August 31, the road washed out near Coyote Spring; two days were required to patch it.

The leaky roof on the registration room at the Citadel has been repaired.

GENERAL

For the past week, the Navajos in this region have been attending the last squaw dances of the year near Cameron. The full moon of this month marked the beginning of a new ceremonial season for the Navajos, one in which the fire dance and the Yei-bichai are predominant. I attended one of the dances at Cameron on the evening of September 18 with Clyde and Sally Peshlakai. Much to the disgust of Sally, I managed to avoid most of the women.

NATURE NOTES

Visitors have reported seeing mule deer and antelope on the road between Wupatki and Sunset Crater. The Gambel quail put out a number of years ago, were seen near the Heiser spring. I counted seven. There is a kangaroo rat colony near the Earth Cracks which seems to be thriving. One can count six or seven in the road every evening after dark. There is a pallid bat which has chosen a corner in my room and has visited me several times during the month. The last time he had to be ejected forcibly.

*****O*****

Do you know, Chief, I believe this boy, Jones, will, as Carroll Miller says elsewhere in this report, "do to ride the river with". He heard a lot of clatter and fuss around headquarters about museums when he was coming on the job, so after he got to Wupatki, he just got together some prehistoric artifacts and began to talk to visitors about them. He is very properly turning in the time as museum contacts. What is more, his average museum time with a party was 15.6 minutes, whereas

WUPATKI (CONT.)

with more experienced men, a very much larger collection of artifacts, and all the necessary gadgets such as cases, labels, etc., at Casa Grande we held the visitor in the museum 20.9 minutes. He is doing about 75 percent as well as the old established museum, and like a new man on the job and with only a handful of stuff.--F. P.

*****O*****

SUNSET CRATER

By David J. Jones,
ranger in charge.

Visitor travel to Sunset Crater dropped back to the 1935 figure this month. There was a total of 608 visitors, as compared to 808 in 1936. Twenty-eight states and Washington, D. C. are represented although more than 75 percent of the visitors came from Arizona (337), and California (130). In addition, there were 15 visitors from the following foreign countries: Canada, Denmark, France, Spain, Australia and China.

I feel certain that the decrease in the visitor travel is because since September 9, Highway 89 has been under construction. The sides of the road near the entrance are piled high with dirt; one can hardly see the signs to the Crater. This goes to show how many people start out with the idea of visiting the Crater rather than seeing the signs and becoming curious.

Rabbitt Brothers' Stores held a picnic at the Crater on September 7. About 35 employees attended. All reported an enjoyable evening.

*****O*****

BANDELIER

By C. G. Harkins,
custodian.

WEATHER

Days clear-	- - - - -	-12
Days partly cloudy---	- - - - -	3
Days cloudy - - - - -	- - - - -	-16
Maximum temperature - - - - -	- - - - -	-92°
Minimum temperature - - - - -	- - - - -	-50°
Range - - - - -	- - - - -	-24°
Mean maximum- - - - -	- - - - -	-88°
Mean minimum- - - - -	- - - - -	-56°
Mean- - - - -	- - - - -	-72°
Precipitation - - - - -	- - - - -	1.49

NATIONAL PARK SERVICE VISITORS

September 15. Mr. Charles A. Richey, associate landscape architect,

BANDELIER (CONT.)

Santa Fe, New Mexico.

September 19: Superintendent and Mrs. "White Mountain" Smith of the Petrified Forest, Arizona; Mr. and Mrs. Tom Conley, acting assistant regional director, Santa Fe, New Mexico.

C. C. C. VISITORS

August 8: Mr. Erik K. Reed, assistant archeologist.

September 1. Mr. Lyle E. Bennett, assistant landscape architect.

September 10. Mr. Tom Conley, acting assistant regional director; Mr. Jim Dooley, project superintendent Camp SP-1-N.

VISITORS

Our travel held up very nicely until September 15 when there was a very noticeable decline. The Santa Fe Fiesta helped considerably. The principal reason for the sharp decline in visitors was the opening of school causing the summer tourists to hurry home. We still have a good many picnickers over Sunday.

Museum cases were installed in the first room and visitors have been very complimentary in their reactions toward our exhibit. We have shown 493 visitors through the museum making 98 parties averaging 13 minutes per trip and 5.3 persons per party.

There were 2,203 people who visited the monument in 609 cars from 38 states and 8 foreign countries. Washington, D. C. had 16 representatives. 117 parties were given ruins trips averaging 7.9 per party and 83 minutes per trip.

SPECIAL VISITORS

Professor Ernest Payer, University of Vienna, September 4.

Dr. and Mrs. A. U. Desjardias from the Mayo Clinic, Rochester, Minnesota.

Mr. J. J. Beliot, Paris, France: September 6.

Mr. Paul Hammond, associated with former Director Albright in the Pacific Potash Company: September 6.

Miss James, executive secretary for the Planning and Civic Association, Washington, D. C.; September 15.

Col. and Mrs. A. H. Muller, Santa Fe, New Mexico: Sept. 16.

Col. and Mrs. P. W. Corbesier, Del Monte, Calif.: Sept. 16.

Louis H. Laury, chief biological aid, Soil Conservation Service, Albuquerque, New Mexico: September 18.

R. G. Sportedier, assistant to Mr. Laury: September 18.

GENERAL

During the heavy rain of September 8, Frijoles creek flowed over the banks in several places and, no doubt, our fish have gone down to the Rio Grande in the high water. Those in the upper end of the canyon have survived but those planted in the vicinity of the Ceremonial Cave were washed out. The only solution to the problem, it seems, is to plant our fish at the upper crossing and take chances on them working down and stocking the stream in the vicinity of headquarters.

Two days were spent on the telephone line repair between Frijoles and Alamo Canyons. This is a tree-to-tree line and lightning struck one of the trees the line was on, causing a short and also breaking off three insulators.

Thirteen new specimens for our herbarium were gathered during the month and will be forwarded to your office along with the plants gathered earlier in the season.

FOREST FIRES

One fire was started by lightning on the South Mesa. After burning about an acre, it was put under control by Forestry Foreman Fulton with a small crew.

OFFICIAL TRIPS

One official trip was made to the Inter-Tribal Ceremonial at Gallup. This trip included Aztec Ruins National Monument and Chaco Canyon National Monument. Cal and Mac have some nice places. I certainly enjoyed meeting the boys and hope to have the pleasure of seeing them at a real monument any time they can get over here.

SEPARATIONS

Mr. Jerome W. Hendron, temporary park ranger, accepted a foreman position with the local C. C. C. camp on August 16.

Mr. Donald J. Lehmer, temporary park ranger, left for Tucson, Arizona, on September 13. He is studying archeology at the University there.

Mr. Woodrow Spires, temporary park ranger, left for his home in Phoenix, Arizona. He plans to attend school at Tempe, Arizona, this winter.

WEATHER AND ROADS

Several good showers have visited this area the past month. One on September 8 washed the roads very badly in the detached section, necessi-

BANDELIER (CONT.)

tating the use of several men and two trucks to repair them so they were passable. The roads at present are very dusty and badly in need of rain. The road from Pojoaque to the detached section is extremely rough.

*****O*****

We are certainly glad to see Bandelier begin reporting in the Museum Talks column of the visitor contacts tables. The average time of 13.0 minutes per party will probably rise as the boys get the knack of talking in the museum. Also, the time will certainly extend when the remainder of the exhibits get in place.

*****O*****

BANDELIER CCC

By H. B. Chase, project
superintendent.

During the past month the doors and windows of the garage, Unit No. 7, of the Hotel Development area have been completed and hung and the roof mopped on. Also the concrete floor in the shop room of this project has been poured and the floor of the garage proper has been covered with tufa gravel, making this a 100 percent completed project.

All interior finish has been completed, doors and windows hung, flagstone and concrete floors completed and inside plastering finished of Unit No. 1, dining room and kitchen of the Operator's Development, making this a 100 percent completed project with the exception of painting and staining.

The flagstone floors have been laid and the walls plastered with mud of the portals in connection with Unit No. 1.

The remaining small line of the Sanitary Sewer Project has been laid making this a completed project throughout the Development Area.

The pipe line project for water supply of the entire Hotel Development Area has been completed this month, with the exception of connecting the valves and fire hydrants which have not been received as yet.

A crew has been in the forest this month completing the felling and hauling of timber for future use in the Hotel Development Area. We now have enough timber cut and stored, we believe, to complete the entire Hotel Development.

During the month there has been a small crew at work in the rock quarry cutting and shaping building stone and stone for the flagstone floors.

Skilled workman, Gardner, completed the hooking up and installation of our inter-communication system, making this project 100 percent complete.

BANDELIER CCC (CONT.)

The work on the large kiva, under the Ruins Repair project, was finished this month. A crew has been at work repairing the Sun House the remainder of the month and, at the present time, this job is almost complete.

A crew has been at work intermittently during the month on excavation of channels and ditches, sloping the banks above the Hotel Development area to take care of the drainage for the protection of the buildings.

The retention of three of our older men as Junior Facilitating personnel and the rescinding of the two year limitation on enrollees under 24 years of age, which gives an additional 17 experienced enrollees, brings a much brighter outlook than we had anticipated on the building progress of this camp for the next period.

*****O*****

BANDELIER FORESTRY

By James T. Fulton,
forestry foreman.

WOOD UTILIZATION

During the months of August and September, I have a crew of 11 men cutting viga and lintel material for use in construction of the remainder of the Operator's Development projects. Now that the timber is cut, delivered, and decked for seasoning, a complete report of the work can be made.

A total of 303 vigas, 25 feet in length and ranging from five inches to ten inches in top diameter, were cut. 2410 lineal feet of lintel material, with a small-end diameter ranging from 10 inches to 22 inches, was also cut. Rotten material, tops and butts, in the amount of 64 cords, were hauled to the canyon to be converted into fuel.

A permit for cutting this timber on the Ramon Vigil Grant, a parcel of land just north of this monument, was tendered us by the Soil Conservation Service. Before a cutting crew began work, the timber was marked by me and checked by a S. C. S. District Forester. The silvicultural aspects, governing the marking procedure, were divided about equally between the need of thinning among many stands and the need for removal of mistletoe-infected trees from the site of a timber stand improvement project. Minor reasons for marking consisted of "wolf tree", beetle tree, suppressed tree, and deformed tree removal.

The actual logging operation was limited in size to fit the equipment available for use. In other words, our one truck and trailer could only haul so much timber each day.

Six men with a leader composed the felling crew. They felled the trees, bucked and peeled the logs and disposed of the slash. Brush disposal was accomplished by lopping and scattering, the scattering being

BANDELIER FORESTRY (CONT.)

done on skid trails primarily. This particular crew had no difficulty in keeping ahead of the skidding crew.

The skidding crew was composed of a caterpillar driver, two men who attached the logs to the skidding chain at the stumps, and one man at the landing to unhook logs and to keep them rolled together. Landings were located so as to make the skidding distances as little as possible. No particular attention was paid to clearance at the landings for loading the logs on the truck because of the naturally open character of Ponderosa Pine stands growing on mesas.

For hauling the timber, the stake body truck (without stakes) and a home-made trailer were used. The loading was accomplished by placing skid poles on the bolsters located on both the truck and trailer and pulling the logs up the skid poles on to the truck by means of a cable hooked to the caterpillar located on the side of the truck opposite to the side where the logs in the landing were located. The ends of the cable were fastened to the truck and trailer and the loop passed under the logs and over the truck bed to be hooked on the clevis on the rear of the caterpillar. The resultant load was then fastened by means of chains and boomers. One man was delegated to ride with the truck driver to assist him in getting the load to where the timber was to be decked, and in unloading it.

The ends of large-diametered logs were painted with roofing paint in order to minimize end-checking. About one-third of the timber is decked on the floor of Frijoles Canyon and the rest is located near the site of our rock quarry because of the lack of enough room in Frijoles. The final result is that we now have what we hope is enough timber to complete the hotel project.

*****O*****

BANDELIER RUINS STABILIZATION

By J. W. Hendron,
foreman.

At the time of writing last month's report, the stabilization of the large kiva was almost completed with the exception of a few minor items, mainly cleaning up.

In stabilizing the east side of the structure it was necessary to reconstruct the ventilator shaft. The lintel and roof of the inner part of the shaft were laid with long slabs of tuff, the outside wall being laid over the top. The shaft itself seemed a bit large and since there were no rests or low walls on the inside to lay the roofing on, they had to be built. Inasmuch as the entrance was large, these walls cut it down and also insured its not being used by human beings. The vent in the small excavated kiva in the inner court of the large community house (Tyuonyi) is still in place and so it was used as a model.

While we were preparing to reconstruct the vent, some of the building

stones of the inside wall fell down leaving the outside wall visible. At this point it was found that the outside wall was wet about eight inches below the inside wall, the stones of the inside wall being set on mud. It would be very difficult to give the thickness of this mud, since it varies so much, meaning that the base rocks for the inside wall were very unevenly set. On the north side they do not even extend down as far as the remaining portion of the hard-plastered floor.

It seems probable that the outside wall was the first of the two walls to be built. It is poorer in construction or cruder to type than the inside wall which could not stand alone, that is, without the support of the outside wall.

Stones were worked for the inside wall and not for the outside. I have noticed only one poorly constructed section in the entire inside wall comparable to the outside wall type and that is on the north, approximately half way between the ventilator and the west entrance. The method here parallels that of the outside wall in that building stones were haphazardly laid beginning about $4\frac{1}{2}$ feet up from the plastered floor level and forming about 10 feet of the inside wall length.

The last of the stabilization work was the mudding of the inside wall, the joints all being hand filled and clinched with small pieces of tuff.

We are now experimenting with various stabilizers for mud plaster, a 20-foot section of the inside wall being used for the test. It is planned for a period of several months as a comparison with the unstabilized portion of the wall, or the part with only mud in the joints.

Approximately 8 inches of the fill was thrown into the bottom of the structure to protect a small portion of the original plastered floor and to serve as a prop to keep the base of the inside wall, which is of mud, from coming out.

In order that the six post holes on the floor remain intact, short logs were placed in the holes and treated in the same manner as a complete post would have been, that is, they were mudded around the sides and filled with chunks of basalt and tuff. At the same time this will show the visitors in what manner the roof was supported.

A stone slab was placed across the west entrance in the same position as the broken one was found. This will show that it was roofed over, but the rest of the roof was left off being made up of short lengths of juniper or pine as was shown during its cleaning.

This completes the kiva project as far as stabilization is concerned with the exception of experimenting with various stabilizing solutions for mud plaster.

BANDELIER RUINS STABILIZATION (CONT.)

All of the fill or screened dump was hauled away and the outside of the structure cleaned up.

The thick outside wall, approximately 12 feet on the south, slopes up to the inside of the kiva which is the highest portion. Most of the drainage will be to the outside, running into an inconspicuous shallow trench around the structure.

The walls of this ceremonial chamber are, today, stronger than they probably ever were but this does not mean that it will stand indefinitely without some maintenance which will not be necessary for some years to come.

While completing the cleaning up work on the kiva, preliminary work was begun on the little reconstructed talus lodge just north of the large community house. This piece of reconstruction was done a number of years ago by the Museum of New Mexico.

When our crew arrived upon the scene, it was found to be in a pretty bad state, not meaning that it was not an excellent job of reconstruction, because it could be easily seen when we began the removal of the old roofing material that it was an excellent job.

The mud had washed from the tar paper roofing and it was rotted on the roof of each room. The thick coating of mud underneath had come loose and fallen through, laying the undercoatings of grass, willow, and pine open to the weather. The only part stable at all were the large vigas made of oak, and they had begun to rot where the willow poles had overlain them.

In every one of the five little rooms, a good portion of the plaster had been washed from the walls and the mortar from between the blocks of tuff was completely out in some cases.

The corner of one of the front rooms had sunk leaving a gap or crack in the east wall where it was joined to the room in back, the wall being so loose and weak that it could be moved back and forth with one hand. Whether or not this was brought into effect by the constant pressure is not known. But undoubtedly, excess weight on such frail structures as these would tend to lessen the length of their standing.

Even the mortar between the building blocks around the top was washed out and many of the blocks had fallen to the ground.

A report on the progress we have made will be in next month's report.

*****O*****

PIPE SPRING

By Leonard Heaton,
custodian.

PERSONAL

If this report appears to be one-sided, lay the blame to the left shoulder and left side of my neck, as this morning in doing some moving I made the wrong lift and wrenched my shoulder so that I can only look straight ahead; but the show must go on.

My 10-year old daughter, Maxine, who has typhoid, is getting along just fine and will be ready for school next week.

My tentative plan to go to headquarters, if my daughter continues to improve, is to leave here October 7 and hope to reach headquarters on October 8 with the old Dodge. Will let you know the forepart of next week just when we will leave.

WEATHER

The weather has been about 50-50 this month for clear and cloudy days with rain in spots on the desert and in the mountains. There have been some heavy rains that filled up the washes so that travel has been stopped for several hours; once on the third and again today. Trucks and cars were stuck and water ran over some of them.

There have been some very hot days and cold nights, the record shows that we have had:

Clear days-	- - - - -	-14
Partly cloudy days-	- - - - -	-10
Cloudy all day---	- - - - -	- 7.

There has been rain in spots in the mountains or near by 12 of the days.

TRAVEL AND LECTURES

My actual visitors contacted have fallen below that of last month, 73 being the number registered and contacted at the fort but, with the lectures and picnics here, I have contacted 235 at the monument.

August 30.--The people of Moccasin held an evening picnic, roasting corn and eating watermellons in the new camp ground.

September 15.--I gave a talk to 106 CCC boys on rules and regulations governing the protection of wild life and defacing park property.

PIPE SPRING (CONT.)

Local travel has held up to about normal this month with stock men going out to gather up their cattle to be sold and to be put into winter pastures.

September 1. Mr. Edward Lamb, Sr., of Orderville was here and related some of his experiences of the early days when he used to drive two and three ^{yoke} of oxen this way, freighting lumber into St. George, Utah, in the early 70's; also some interesting things that happened while he was acting as a cattle foreman on this range.

NATURE NOTES

There are hundreds of Pinyon Jays and crows around here now coming in after the pinyon nuts that have commenced to fall. Other birds have increased but little over the usual summer flock numbers.

The Bermuda Grass seed that I planted last spring is beginning to grow now and is making splendid growth since the storms the first part of the month. From the way it is spreading, it will not be long until the monument will be covered with it. I am wondering if it will withstand the drouth and hot weather next summer. Let's hope so!

I am thrashing out the seed from the grass the CCC boys gathered for the hillside last June and intend to plant it on the east half of the monument this fall. I have also decided to plant a lot of pinyon nuts on the hill back of the fort this fall, as I would like to see a lot more trees growing up there.

CCC ACTIVITIES

There has been no work done by the CCC on the monument this month, although I asked to have a truck and a few boys to haul some dirt into the wash to cover up the trash dumped there by the camp.

Some 70 boys left for home September 20 and the camp will not be refilled until after October 10.

There are about 12 boys at the side camp at House Rock Valley, and about the same number at the other side camp, leaving about 20 men in camp.

MUSEUM

I made two frames for the geological maps sent me by Mr. W. W. Vandiver, and hung them in the middle room of the upstairs of the lower house.

PIPE SPRINGS (CONT.)

GENERAL

September 3, I went to Cedar City, Utah to get the new Ford pick-up truck for this monument, and it surely is a dandy. Not only that, it makes work more of a pleasure when one knows he will be able to get back home without a lot of trouble or breakdowns, as I have felt while working with the old Dodge.

September 16, I hired a farmer to bring in his team and mower to cut the meadow and some weeds, and I spent the next two days cleaning up after him. It makes the place look a lot better. I have also been hauling a few loads of gravel to fill up the low places in the camp road and around the tables. We need a lot of gravel on the main road through the monument from the west end of the parking area to the CCC camp entrance, some 350 feet. The first gravel put on has been washed off by the recent rains.

On September 2, I tried to get in touch with Mr. Al Kuehl, but was told that he had taken a vacation and would not be back until September 25, so I was surprised to find that he had been here on September 5 while I was in Kanab to a meeting. He promised to be back soon.

Thanks for sending up the Broadcast again as I surely eat it up. I seem to get more out of it than any other instruction or letters you send out. It is more personal and seems more like you than the business correspondence we have.

*****O*****

I wonder if it wouldn't be a good idea to get Mr. Lamb to get his experiences of the early days down on paper for an article in our Supplement? This report of ours goes into many libraries and other places of permanent preservation, so that such information once put into the Supplement would never afterward be entirely lost. Suppose you write him, Leonard, and see what can be done about this.

Thanks for the compliment on the Broadcast, Leonard. The reason it is more like me than the bank run of stuff you get from us, is that I really write it, whereas I just sign the other stuff; these boys in the office do all the real work.--F. P.

*****O*****

NATURAL BRIDGES

By Zeke Johnson,
custodian.

Report time finds us all OK, and the Natural Bridges weather has been ideal for travel all month. However, it has been a little drier than we like it, although we have had several fine showers.

The roads never were so good before as we have a real road man on the job now. Whenever I tell him that they need repair at any place on the 50-mile stretch, he is always on the job as soon as possible. He has a big tent pitched on top of the hill just south of Bears Ears and he leaves it there all the time. Seems like south of Bears Ears is where we have the most washouts. He has all of the rough places taken out now so it is a pleasure to drive all of the turns and twists.

There is plenty of travel out to Maverick Spring now as there are tons of pine nuts south of Bears Ears and people are beginning to go out there to camp and gather nuts. There have been 140 people who registered this month, making 598 for the year and I am sure that there have been more than 100 who did not register; possibly 150.

I hardly know how to report on the contacts made or time spent in talking about the monument. Just for example: last Friday (the seventeenth) at 11:00 a. m. three men drove up and wanted to hike to all the bridges, so off we went. When we got to Augusta and I told them about the ruins up the canyon, they wanted to see them also. We hiked the 13 miles and got back to camp just at sundown. There I found a swarm of people. Twenty-seven came in a big red truck, eleven in another party in two pickups, and three in an auto. All were prepared to camp. And talk about a buzz until about 1:00 a. m.! There were 16 campfires and 4 or 5 different games going on by the light of a big moon.

At 7:30 a. m. I started on the nine mile hike with 30 people. We went down to Caroline first. There I met four people that had decided to go to Augusta first. The other 11 only wanted to see the Edwin. Then when I got up to Augusta, there were 27 more scattered all over and around the bridge. They were CCC boys from the north. Well, it was a real mixup. Some wanted to go up to the ruins, some wanted to go to Caroline, some wanted to see both places, and some wanted to go back to camp. After that, we were scattered in 4 or 5 bunches. I went with about 30 up to the ruins. On our way home, when we reached the top of the hill above Augusta, we met four others that had started the 9-mile hike. I told them it was too late, it being after 4:00 p. m., so they just went to Augusta and back. Then when we got to within one mile of camp, we met another three going to Augusta, but they were so late they went only to the top of the hill and looked off. (Made the sacrifice but didn't see anything). I spoke to everyone I could get to, but had no chance to talk to any but the first bunch I started with under Caroline Bridge. Oh yes, at camp there were two more cars with another seven people. I talked to them that evening and hiked the next day. In all three days there were 75 people but only 52 registered. It was the worst ball-up I ever had. I needed about 10 more men to put over a good job but I had a good interesting time just the same, although I was glad when it was all over. If you can tell how many I contacted, or how many minutes I spent in talking, you've got me beat. It is a mathematical problem, but lots of fun when people come like that.

NATURAL BRIDGES (CONT.)

It looks as if I will be plenty busy this coming month for about all the hunters will be down to see the Edwin, at least. I am oiling up my joints now and making ready for plenty of hiking. This month I have hiked on 11 trips making, in all, 111 miles at my way of measuring, but you know that I have been accused of measuring my miles with a coyote hide and always throwing in the length of the tail. So maybe I have walked farther than I give myself credit for. Anyway, I am raring to go for the next month.

Mrs. Johnson is getting along fine. She's not her real self yet, but soon will be, if she keeps on improving.

*****O*****

We are all happy at the good word from Mrs. Johnson, Zeke, and hope she regains her full health. You take good care of her. Good material for Park Service employees is hard to get hold of and we don't want anything to happen to either one of you.

I don't know the answer to that contact problem you put up to us so I will let it go as it stands. We plan a little session as soon as we can get to it in which we will overhaul our methods of counting visitor contacts and see if we can get more information with less work, or at least get more information. We are not altogether satisfied with the present statistics.--F. P.

*****O*****

CANYON DE CHELLY

By Johnwill Faris,
custodian.

The month of activity as covered by the September report started off with a bang. I left Canyon de Chelly at 4:30 a. m. in order that I might meet some of the boys in Gallup at 8:00 a. m., and we might arrange some form of display for the Ceremonial, the big Indian gathering of the Southwest. The first three days of the month I spent at the Ceremonial, the first day being especially long in that in addition to my leaving early that morning, it was necessary that I go out with Tommy after the dump truck almost to Shiprock and we returned to Gallup about 1:00 a. m. Tommy and Pete both had a day at the Ceremonial and then we hit the ball hard, ending up the time that I was to have Tommy and Pete with me.

Both trucks were in town for equipment the early part of the month, one making two trips. A pit was started for the storage tank, but we had to call in help from the outside to finish it up. Sunday, the fifth, at the close of work, both Onstott and Peterson dropped their official duties. Onstott got away to an early start the next day for headquarters and Pete took a little longer, getting away about noon on the seventh. Both boys put in a good summer and the fact that I am able to make a

CANYON DE CHELLY (CONT.)

report on complaints with none at all speaks for itself in the service that the boys put out. The monument was well manned and I can assure you that, while it might seem that three men are in excess, considering the number of visitors we have the monument would have suffered materially with any less. Even three would be worked to death if we had encouraged horseback trips.

Speaking of horseback trips; the very next day after Tommy and Pete left, we had our first horseback trip of the season. Being mail day, and with another party on my hands that morning anyway, I was forced to hire a man and horse for the day. The midweek mail brought an appeal from the railway freight office to call for some of our equipment and a trip to town the week-end found me face to face with the Brewers, Budlong, and Harris from Chaco. I had a few minutes with each of these boys and then back to de Chelly.

The canyon being in grand shape meant that I did not want for company and, too, meant that much longer was spent in the canyons than for some time since it was possible to go so much further. You will notice that about the middle of the month the time jumps up on each party. You can get a pretty fair idea of the condition of the canyon from our time with each party. Long parties mean that both canyons are visited.

A number of interested visitors arrived during the month. I really think that as a whole, the people this month have been really more interested than during any equal time since my term as custodian. Perhaps it is only that I am getting used to the wonders myself, and, too, without Tommy and Pete, it fell my lot to answer a lot of questions that they had been taking in the past few months. One visitor left a glass tube with his name and address and hopes to revisit it anytime within the next five, ten, fifteen, or twenty years to note the effect the sun's rays have on his tube. It is on the roof nailed to one of the big roof beams.

We have had several parties stuck in both dry sand and quicksand in the course of the 247 that have visited us this month. Of course, they were not allowed to travel the canyon if the quick sand was dangerous, but one or two parties got quite a thrill in being stuck in the quicksand.

One of the most genial parties of the entire season just left us this morning after having spent two nights and a full day with us. It was none other than the Under-secretary of the Interior, Charles West and his wife, and Charlie and Marge Smith from the Petrified Forest. The Wests proved themselves to be real sports and when their car failed to make a stiff washout and mired down in the mud, the Under-secretary was right along side of a Navajo with his shoulder to the fender as deep in the mud as any of us. I am sure the Park Service has two very loyal friends in Mr. and Mrs. West, and de Chelly is proud to have listed them

CANYON DE CHELLY (CONT.)

among its visitors and hopes to have the honor to repeat it often in the years to come. Of course, Charles and Marge Smith know that they are supposed to get up here whenever they can. Marge says it is really hard for Charles to settle down to the Forest after seeing this wonderful unit and she hates to have him come up too often on just that account. At least that is the way I understood her, Boss. It may be that those were not her exact words.

Bidding adieu to the above party this morning, I hurried into Gallup for another load of equipment, and am getting this off tonight in order to get a crew of men to work on the adobe for our new equipment shed and take care of a group of 5 visitors at 8:00 in the morning. So, I beg off this time so that I can get a good start on another month, and really, I am not trying to fool anybody.

After reading this over, it seems that I have done nothing but brag about how busy I have been, and one might think that I have not had a minute of rest or time to enjoy life, but I do not recall many months in the Service that I have really enjoyed any more than I have this one. Every minute of it has been a pleasure and I wouldn't trade monuments with any two fellows in the system, even Cal. Miller at Aztec and old traitor Tommy at Tonto. There just ain't any two places as good as this one. (Something tells me I must have severed diplomatic relations with several of the boys in the statement above). Anyway, Boss, you know it's true.

*****O*****

It is fine to have you speak in such complimentary terms of Tommy and Pete, Johnwill, and we see no reason why, if they were as satisfactory as you indicate, it could not be worked out for you to have them again next summer.

From some experience I have had with glass changing color in the sunshine of the Southwest, you can tell your visitor that only cheap glass will change. Good cut glass, for instance, will remain unchanged. Lamp chimneys, lantern globes, pickle bottles, and other cheap glass will change to a beautiful tint in from about nine months on up to several years, though I don't believe the tint deepens much after the first couple or three years. I have been told by some chemist that the cheap methods used in clearing cheap glass leaves an unstable compound in the glass which the violet rays of the sun's light breaks down.--F. P.

*****O*****

BRANCH OF EDUCATION

By Dale S. King, park
naturalist.

The educational staff until September 8 consisted of Park Naturalist King, Junior Archeologist Steen, and Student CCC Technician Miss Gertrude Hill. On this date Miss Hill returned to the University of Arizona for graduate work which will culminate in an M. A. degree this academic year. Her accumulated leave carried her on the payroll until September 15.

The thoroughly efficient and intelligently executed efforts of Miss Hill accomplished the cataloguing of most of the volumes of the rapidly expanding Southwestern Monuments Loan Library. Her detailed report is printed in the Supplement to this Monthly Report. Such cataloguing had been urgently needed for some time, but our limited personnel and experience in the work made it an almost hopeless job to tackle. Miss Hill's summer carried the library program years forward. If another equally capable technician could be obtained next summer, our voluminous reprint and pamphlet collection might be shaped into more usable form.

All positions in the educational staff were filled September 13 for the first time in more than 12 months with the arrival of Junior Park Naturalist Natt N. Dodge, transferred from Ranger at Grand Canyon National Park, vice King, who was promoted to Assistant Park Naturalist June 18. Dodge comes to us with general naturalist experience at Mt. Rainier and Grand Canyon National parks, is an accomplished photographer and has had considerable success along the lines of writing and editing. His work will deal principally with the biological aspects of the Southwestern Monuments educational program.

Much of Dodge's time this month was spent in becoming acquainted with the routine of office work and with the various files, the library, operation of the mimeograph, and with other details of the naturalist work.

He worked on various projects, as follows: mimeographing informational pamphlets, binding monthly reports, bringing library loan cards up to date, completing the re-typing of biological observation record files, guiding visitors through Casa Grande ruins as an introduction to general guiding methods in the Southwestern Monuments, cutting stencils, preparing preliminary working plans for biological display at Bandelier, writing letters, obtaining information to answer written requests, making a study skin, and planning with other members of the staff various projects connected with the advancement of the educational program. Stencils cut, 3; study skins prepared, 1; mimeographed pamphlets, 1,900; letters written, 3; specimens collected, 2 botany, 2 entomology.

Junior Archeologist Steen spent August 25-28 at Gallup, New Mexico, helping with the exhibit at the Gallup Ceremonial. From Gallup he went

HEADQUARTERS, BRANCH OF EDUCATION (CONT.)

to Chaco Canyon National Monument and worked with Robert Harris and Gordon Vivian of the CCC Indian Mobile Unit until September 2. From the second until the twelfth he was at Aztec Ruins National Monument making a preliminary installation in the new museum cases. He returned to Headquarters September 15, and worked the remainder of the month on the photograph library and on the working plan for the museum at White Sands.

Park Naturalist King spent the entire month in the office, occupied mainly with routine and organization matters. More than 100 letters were written facilitating, among other things, the following projects: transfer from the U. S. National Museum or other large institutions to the various monuments type collections of bird, mammal, and reptile specimens for study and display; organization of a Southwestern Monuments Association which will parallel to some extent the activities of the Grand Canyon, Yosemite, and Zion-Bryce Natural History Associations; standardization of museum accession policy and procedure; organization of a master photograph and negative library for the monuments; formulation of a general outline for the educational program.

Received during the month were:

- 300 biological specimen labels from the Washington Office.
- 7 prints of pictures taken at Hovenweep in 1887, Mrs. John Ismay of Cortez, Colo.
- 9 prints of the Roskrugs pictures of Tumacacori taken in 1889.
- 2 botanical herbarium specimens
- 2 entomology specimens

The Southwestern Monuments Loan Library received:

- 5 steel bookcase sections with one top and one stand.
- 45 periodicals
- 10 pamphlets
- 18 books
- 2 reprints

*****O*****

MOBILE UNIT

By Gordon Vivian, archaeologist foreman.

Since the tourist season is slacking off a little and Custodian McKinney and his new moustache are slowing down a bit, I wonder if it would be all right to trade him off for a stone mason.

Not that I don't have any good masons, but since the concrete capping and the dirt fill have been removed from Kivas C and D and a lot of very tired wall exposed there, another well-trained mason would help.

MOBILE UNIT (CONT.)

the Mobile Unit a lot. The capping that was taken off these two kivas and the surrounding areas amounted to 130 square yards and the dirt fill removed was 400 cubic yards.

With the dirt away from the outside of Kiva D, it developed that part of the east curve of the wall has no exterior facing or veneer. Just the veneer on the inside of the kiva, a little core with rough slabs of rock sticking 6 to 10 inches out into what is now nothing, and no facing. There is a roughly triangular stretch of this hanging core and all of it protruding out over the faced wall below.

To date this misbegotten piece of core and the interior veneer where there was no adequate support for it have been taken down to something solid and the exterior facing, the core and the interior veneer are being built up together.

Of the area walls surrounding Kiva D, only one had a hole in it (five by two and one half feet), and this down at the bottom. It has now been repaired. The room wall on the east side of the kiva, which makes between it and the kiva wall, area 239, had been repaired before with concrete and hog wire. It is fairly strong but with the dirt gone, the concrete and wire are sticking objectionally out into sight.

Kiva C, the next to have the concrete removed, is in better shape. It needs a little wall patching on the inside and the top should be set in bitudobe mortar.

While the work at C and D was going on, some of the men were moved down to the kivas that front the plaza on the east, K. J, I and E. The first work here was the repair of the worst places in the walls and benches so that removal of the capping and back filled dirt would not endanger the walls. These four kivas present perhaps the worst area in the pueblo. Sixteen of the bigger gaps in the walls were given new veneer before removal of the capping began. Though this is now under way, work on the kiva walls is continuing. There are a lot of small spots where two or three stones have fallen out or larger areas where moisture has softened the stone until it is decaying and sloughing off. Only one mason is doing this work until it can be determined how safely decayed and rotten rock can be chiseled out and replaced.

Somehow I think that these low kivas that had big chunks of veneer gone, fallen benches, and large areas of soft wet rock in the walls are going to give us more trouble and take more time than any other area in the ruin. The dirt which comes out of these external kiva corners down here close to the ground level is quite wet and a handful can be squeezed into a solid ball.

As removal of the fill from around these kivas progressed, it developed that the walls enclosing Kiva E on the east had been plastered and a

MOBILE UNIT (CONT.)

floor laid in the area just above the level of the kiva floor. Then it turned out that on the other side (the west), Kiva E. has no external facing and very little core. Kiva I, right next to it, is also missing the external facing and some core on a small area.

If we leave the dirt there, the kiva will soon melt away completely and if we take it out, we will have to rebuild some 200 cubic feet of core and facing. I don't mind working on fallen, broken, overhanging, or just tired walls that have been out in the weather a long time (though the amount of work to be done at Bonito sometimes startles me) but when we go and dig up something like this that almost leers at you when you first see it.....! Two masons and a flock of rock carriers are getting it out of sight as quickly as possible.

From this condition both here and at D, and the motley array of masonry types inside these kivas, I think that they had originally fallen much flatter than they are now. Then they and the external corners were excavated and following that, the walls rebuilt and the corners refilled at the same time. This way it would be necessary to rebuild only the interior veneer and a small amount of core.

Just east of all these kivas and trouble, back into the house room section, there is about a half an acre of tottering walls. So to keep some of these 23 men from stumbling over onto those who were working below, I took some of them away and tackled a straight wall. This one was missing the veneer for about 10 square feet on one side and the middle of the wall was two and one half feet out of plumb.

We took this thing down until there was no more bow in it and then started to rebuild. This may sound a bit drastic, but with almost four feet in height rebuilt, I believe that it is going to be the easiest sort of work that we have to do here. The masons are good, and I doubt if it can be told from the original except that it is straight and is all there. The rock was taken down carefully and piled and is now going back more or less in place. With three masons laying it up, it is going faster than I expected.

Then down at Room 162, another mason is repairing some of the masonry composed of large soft blocks. This has been variously called Number III Bonito, and Chetro Ketl IV, spalled blocks with core, etc. This is in the area where the capping is particularly bad; all the mortar has been washed from between the rock and the rock faces have sloughed off. Repair is being carried up almost to the top. Completion of the job is awaiting the bitudobe.

All this sounds like a lot of masons busy. We started with the two old Chaco Canyon standbys, Charlie and Agapito Atencio, and from there we've been breaking in one new man at a time until we now have nine working. Before long I hope to have a more or less permanent mason force of

12 or 14.

The equipment is holding up all right. Since the first of the month we've had a broken axle and a punctured gas tank on the trucks. Both of these were fixed in camp. The cut-film magazine and the focusing panel for the camera arrived yesterday, but it's been too cloudy for me to try them out. When the exposure meter comes, the trembles that I get every time I take a picture ought to subside somewhat. During the past few years, I have taken enough pictures in the canyon to keep me poor but it hasn't helped my confidence much. Every time I take one of these "before" shots, it frightens me stiff.

The Harris bath house is in fine order with hot, cold, and luke-warm showers. This, I think, is one of the best things that has ever been done in the canyon. Though I will have to add the pessimistic note that it is going to be hard on the wood supply.

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VISITOR STATISTICS

By the Boss.

In the visitor year just ending, we have delivered to the public 16,533 field trips. 98,929 persons used this service, averaging 5.9 persons to the party, and the average trip lasted 44.3 minutes.

The previous year we had delivered 17,157 trips to 95,943 persons; an average of 5.5 persons per party and 43.0 minutes per trip.

These figures say that we took more people this year in a fewer number of parties and were thus able to give each party a little more time. The lowest average party time was 35.2 minutes and it occurred in November. The highest was 51.6 and occurred in August. The season, however, seems to have little to do with this as in the previous year the lowest time of 37.1 occurred in September and the highest, 49.9, in December.

In the year just ended, we gave 9,574 museum talks as against 7,906 for the previous year. We had 54,437 visitors as against 46,552 for the previous year. The parties averaged 5.6 persons as against 5.8 for the previous year, and the time averaged 18.1 minutes as against 19.9 for the previous year; 1.8 minutes less. This average time fluctuated from a minimum of 15.1 in November to a maximum of 21 minutes in January. The previous year the fluctuation was from a minimum of 18.5 minutes in March to a maximum of 21.3 in July. There seems to be no regular seasonal fluctuations. Probably the time is more affected by change of personnel than by seasons.

All told, we had 153,912 educational contacts out of 266,520 visitors, or 57.7%. In the previous year we had 142,425 contacts out of 245,784 visitors, or 57.9%.

FIELD TRIPS				MUSEUM TALKS				EDUCATIONAL CONTACTS	TOTAL VISITORS	PERCENT CONTACT.
NUMBER	ATTEND.	TIME	AV. ATT.	AV. TIME	NUMBER	ATTEND.	TIME	AV. ATT.		
Oct., 1935	1045	6760	5.4	49.8	389	2805	7780	7.2	12608	75.8
Nov., 1935	1072	6354	5.9	48.8	295	1859	6000	6.3	11309	72.6
Dec., 1935	926	4769	5.1	49.9	284	1508	5680	5.3	8525	73.6
Jan., 1936	964	6528	6.7	41.4	461	3008	9220	6.5	14044	67.5
Feb., 1936	1141	7200	6.3	41.1	474	3369	9680	7.1	13859	76.2
Mar., 1936	1274	7348	5.7	41.8	535	5474	9914	6.4	15379	70.3
Apr., 1936	1486	8715	5.8	43.6	642	4310	12411	6.7	18830	69.1
May, 1936	1095	5972	5.4	47.8	614	3222	11841	5.2	22833	39.9
June, 1936	1555	7124	4.5	46.5	784	4037	15405	5.1	23838	46.8
July, 1936	2100	11011	5.2	41.0	1129	6008	24135	5.3	30110	56.5
Aug., 1936	2410	13735	5.6	39.1	1178	7049	24504	5.7	40942	50.7
Sept., 1936	2089	10427	4.9	37.1	1121	5903	21483	5.2	33507	48.7
TOTALS	17057	95943	5.5	43.0	7906	46552	158053	5.8	*245784	57.9
Oct., 1936	1348	6184	4.5	39.0	997	4713	16757	4.7	14869	73.2
Nov., 1936	1299	7926	6.1	35.2	691	3127	10455	4.5	14283	77.3
Dec., 1936	1019	6061	5.9	40.3	464	2902	8856	6.2	13021	68.8
Jan., 1937	977	7328	7.5	36.1	388	3158	8209	8.1	15577	70.8
Feb., 1937	1181	8011	6.7	40.8	632	3863	10280	6.1	15661	75.8
Mar., 1937	1266	7837	6.1	38.4	631	4108	11084	6.5	19345	61.7
Apr., 1937	1410	8210	5.8	43.4	753	4733	14148	6.2	22719	56.9
May, 1937	1256	8413	6.6	44.5	799	4492	15376	5.6	21463	60.1
June, 1937	1589	8696	5.4	49.0	1055	5564	20806	5.2	25342	56.2
July, 1937	1648	8935	5.3	48.6	1051	5518	18185	5.2	34717	41.6
Aug., 1937	1940	12259	6.3	51.6	1094	6894	20876	6.3	40035	47.8
Sept., 1937	1600	9071	5.6	48.5	1019	5365	18896	5.2	29488	48.9
TOTALS	16533	98929	5.9	44.3	9574	54437	173928	5.6	*266520	57.7

*Not the total of all visitors to Southwestern Monuments, but the total at monuments with which these figures deal.

The thing which pleases us about the visitor statistics table this month is that we have eight reports under the "Museum Talks" column. Bandelier and Wupatki are making their first appearance. We have an idea they will both run very light this fall and winter but they are in operation and will be ready for the spring traffic. Also by that time we will have Tumacacori and White Sands museums and will thus be delivering museum service at ten of our Southwestern Monuments.

Strangely enough, our guided field trips in September ran an even 1600 as against 1940 in August. We served 9071 visitors this month as against 12,259 last. The parties averaged 5.6 people this month as against 6.3 last and the time per party was 48.5 minutes this month as against 51.6 minutes last month.

All of which is to say we reached the crest last month and have the annual and fairly normal drop in field trips this month.

We gave 1019 museum trips in September as against 1094 in August to 5,365 visitors in September as against 6,894 in August. The drop in museum visitors is not as great as in field trip visitors because of the two new museum visitor reports which were not included in the previous report. The average party this month was 5.2 as against 5.2 last month. The average time per trip decreased from 19.08 minutes to 18.5 minutes.

Taken altogether, at the monuments reporting, we had 29,488 visitors and made 14,436 contacts or 48.9%. Last month we had a 34.5% contact.

As compared with last year, this September shows a slacking off. There were 2089 field trips last year and only 1600 this year. There were 10,427 field trip visitors last year and 9,071 this year. The trips averaged 37.1 minutes last year and we raised that to 48.5 minutes this year.

Last year we gave 1,121 museum trips to 5,903 visitors, the trips averaging 19.1 minutes each. This year we gave 1019 museum trips to 5,365 visitors, the trips averaging 18.5 minutes each.

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SOUTHWESTERN MONUMENTS

MONUMENTS	Employees		GUIDED TRIPS				MUSEUM LECTURES				Unattended	Total Educa'l Contacts	Total Travel	Per cent contact
	Per.	Temp.	No.	Att'd	Time	Av. Att'd	Time	Av. Att'd	Time	Av. Time				
Arches	P	-	-	-	-	-	-	-	-	-	-	-	-	-
Aztec	2	-	261	1666	9065	6.3	34.7	-	1791	5204	6.4	18.6	1806	191
Bandelier	2	2	117	924	9710	7.9	83.0	98	493	1274	5.3	13.0	2203	64
De Chelly	1	1	41	164	6320	4.0	154.1	-	-	-	83	164	247	66
Capulin	P	-	-	-	-	-	-	-	-	-	5000	-	5000	-
Casa Grande	2	-	232	1641	7972	7.0	34.4	135	1005	2832	7.4	20.9	1887	140
Chaco Canyon	1	1	106	579	8440	5.4	79.6	84	406	2205	4.8	26.2	1149	86
Chiricahua	1	2	81	583	3963	7.2	49.0	-	-	-	493	583	1076	54
El Morro	1	-	65	333	4945	5.1	76.0	-	-	-	92	333	425	78
Gila Cliff	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gran Quivira	1	-	95	379	5691	3.9	59.9	-	-	-	71	379	450	84
Hovenweep	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Montezuma	2	0	223	853	7383	3.8	38.11	190	714	3230	3.7	17.1	1239	126
Natural Bridges	1	-	-	-	-	-	-	-	-	-	140	-	140	-
Navajo	1	-	18	62	2520	3.4	140.0	-	-	-	2	62	64	-
Organ Pipe	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pipe Spring	-	-	24	235	689	9.8	28.7	-	-	-	28	235	-	-
Rainbow Bridge	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Saguaro	-	-	-	-	-	-	-	-	-	-	654	-	654	-
Sunset Crater	-	-	-	-	-	-	-	-	-	-	608	-	608	-
Tonto	-	1	48	184	2462	3.8	51.3	47	202	635	4.3	13.5	277	139
Tumacacori	2	-	178	928	5914	5.2	33.2	-	-	-	97	928	1025	90
Walnut Canyon	1	-	85	458	1685	5.3	19.8	160	672	3110	4.2	19.4	1465	77
White Sands	-	-	-	-	-	-	-	-	-	-	9164	-	9164	-
Wupatki	1	-	26	82	925	3.1	35.5	26	82	406	3.1	15.6	346	47
Yucca House	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Headquarters	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19	7	1600	9071	77684	5.6	48.5	1019	5365	18896	5.2	18.5	14436	48.9

1937

TRAVEL

YEAR

STATISTICS

	ARCHES	AZTEC RUINS	BANDELIER	CANYON DE CHELLY	CAPULIN M MOUNTAIN	CASA GRANDE	CHACO - CANYON	CHIRI - CAHUA.	EL MORRO	GILA	GRAN QUITVIRA	HOVENWEEP	MONTESUMA CASTLE	NATURAL BRIDGES
Oct., 1936		815	728	119	400	2190	732	690	169		159		499	65
Nov., 1936		654	518	45	600	2909	585	330	78	11	290		353	
Dec., 1936		576	227		800	3052	220	273	75		174		512	
Jan., 1937		278	231	3	600	3744	89	241	7		274		172	
Feb., 1937		214	260		700	3845	91	205			109		313	
Mar., 1937		551	320		800	3912	309	488			142		655	
Apr., 1937		1102	667	4	1000	3627	803	1087	114		202		948	
May, 1937		1568	1395	222	1200	2689	796	1013	228	7	531	250	907	109
June, 1937		1802	1341	208	2000	2389	901	1501	258	65	781		1205	146
July, 1937		1881	2665	237	6000	1613	1026	1247	383	23	410		1507	150
Aug., 1937		3056	3825	337	7000	1804	1313	1077	561	79	892		1503	140
Sept., 1937		1806	2203	247	5000	1887	1149	1076	425	12	450		1239	610
REPORTED TOTAL		14303	14380	1422	26100	33661	8014	9228	2298	206	4414	250	9813	740
ESTIMATED TOTAL	1000	14303	14380	1422	26100	33661	8014	9228	2298	250	4414	500	9813	
	NAVAJO	ORGAN PIPE	PIPE SPRINGS	RAINBOW BRIDGE	SAGUARO	SUNSET CRATER	TONTO	TUMACA - GORI	WALNUT CANYON	WHITE SANDS	MUPATKI	YUCCA HOUSE	TRAVEL YEAR 1937	TRAVEL YEAR 1936
Oct., 1936	21		89			287	217	808	758	5979	155		14889	12608
Nov., 1936	5		180		742	205	233	1194	353	4907	107		14299	10452
Dec., 1936			105		767	141	252	1375	280	3864	108		12801	8525
Jan., 1937					1604		438	1964	25	6007			15677	13960
Feb., 1937			5		1891		700	2894		4460			15687	13859
Mar., 1937			11		1545		900	2188	34	7386	90	56	19331	15515
Apr., 1937	1		38		1302		840	1808	635	8278	264		22776	18830
May, 1937	40		33		777	491	413	1551	667	7921			22699	22682
June, 1937	46		50		665	491	403	1429	1548	8674	252		26118	23471
July, 1937	56		185		420	1212	399	1157	1954	12421	341		35283	30110
Aug., 1937	95		111		511	1193	296	1079	2590	12471	417		40361	40942
Sept., 1937	67		235			608	277	1025	1465	9164	346		28818	33507
REPORTED TOTAL	329		1042		10224	4628	5368	18472	10309	91532	2080	56	268739	

1937 TRAVEL YEAR COMMENTS

Two hundred ninety one thousand four hundred and twenty six persons visited the Southwestern Monuments during the travel year of 1937. This was an increase of 36,720, or 14.4 percent more than the 1936 total of 254,706.

The 1937 total is probably the most accurate travel figure yet submitted by the Southwestern Monuments. The seventeen monuments with full-time or almost full-time personnel reported very reliable figures. Sufficient surveys were made to establish accurate estimates on seven monuments--White Sands, Capulin Mountain, Sunset Crater, Hovenweep, Yucca House, Rainbow Bridge, and Gila Cliff Dwellings. On only two areas--Organ Pipe Cactus and Arches--are we guessing more or less in the dark, but estimates were kept intentionally low to avoid even the appearance of trying to inflate our total figure. It is very obvious that a travel total of practically three hundred thousand interested visitors is impressive enough without the slightest inflation. We have nearly all the problems of a great, heavily visited park, plus a few more problems of our own, i. e., administration of widely scattered areas, greater necessity for intimate personalized guide service, etc.

White Sands, as usual, was by far our most-visited area, drawing nearly one hundred thousand recreationally and scenically minded persons to its unique attractions. And there was no personnel at the monument to greet them, to furnish information or help of any kind. Public-spirited Custodian Charles met many people on weekends and occasional evenings, but our real service at White Sands will start only when newly-transferred Ranger Geologist Jim Felton makes the shift from Tumacacori.

Casa Grande with its continuous year-around traffic culminating in the winter months ranked second, and unexpectedly gained 5,887 over its 1936 total. We have no very accurate figures on Capulin (3), but part-time Custodian Farr keeps an eye pretty carefully on the travel and estimated that 6,150 more persons visited the crater than a year ago.

Other increases were noted at (5) Tumacacori (4,350); (6) Bandelier (1,436); (7) Aztec Ruins (1,314); (11) Chiricahua (3,213); (12) Chaco Canyon (297); (15) Gran Quivira (440). The figure in parenthesis before the monument name refers to its rank in relation to other monuments' travel.

Monuments to which we do not encourage travel because of lack of personnel or facilities showed gains in spite of absence of publicity. These were: (16) El Morro (400); (18) Canyon de Chelly (331); (22) Hovenweep (200); and (26) Gila Cliff Dwellings (150).

Travel figures to several monuments remained stationary or dropped slightly, usually due to poor approach roads or inclement weather conditions. These were: (8) Walnut Canyon; (10) Montezuma Castle; (13) Tonto; (17) Wupatki.

CLOSING

By the Boss.

Chief, if you have read this far you will see that we have had a prosperous month among the Southwestern Monuments and it looks like we have pretty good business ahead of us for the winter months. I have a feeling that our winter business will be somewhat short of last year, the figures at hand would indicate it but they might change in the next thirty days, it is too early to predict winter traffic on the present figures.

We are in a little better position this year than last as to protection of Navajo, Wupatki, and Walnut Canyon, which pleases us very much. Due to the horizontal cut in our funds to balance the budget, coupled with the steady growth in the number of our visitors to be handled and the expansion of our work by the addition of another monument and the possibility of one or two more before the year is over, we do not at present see how we are going to get through the year with the funds we have left. Of course we will make the grade somehow - we always have.

We are beginning to get our ranks filled up again and we are pleased to note that appointment papers are coming through faster now than any time in the last couple of years. For the first time in a year our Educational Staff has its full number of three men to take care of the problems of eight museums, which will soon become ten, and our three hundred thousand visitors. With one man on furlough and another transferred to another unit of the Service, we had one man trying to do that work for the greater part of the year because we couldn't get action on filling the vacancies. Quite naturally the work suffered.

At present we are in the process of filling a vacant Chief Clerk position with the boys in the office splitting the work up amongst them. We are also trying to fill two ranger positions. When we get these men on duty we will feel like the organization is moving forward again.

The visitor year just closed has been a good one and we are pleased to note that the visitor curve seems to be flattening out at some of our monuments. We like to see the grand total of our visitors advance from year to year, but we do not want the total to advance at every monument because at some of them it would mean hatching a new set of troubles for us every year. Since we cannot govern these visitor curves directly by just arbitrarily telling visitors not to come to certain monuments, I still think we had a good idea when we proposed to govern them indirectly by choosing a fine archeological site down on the highway where we could satisfy about 90% of the tourists and keep them from going to our gem monuments where a crowd brings so much grief.

For lack of funds, due to our 10% cut, I fear we will not be able to put a man at the Organ Pipe Cactus National Monument this winter and will thus not be able to get our preliminary studies of that monument.

CLOSING (CONT.)

I would like to make these studies as soon as possible in order to show our good faith with the Government of Mexico for, as you know, we have a three-way agreement to handle visitors along both sides of the border. I may be able to submit some plans to you in this connection later in the winter.

On the whole, our work is progressing well, and we are looking forward to a very busy and very pleasant winter's work.

Cordially,

Frank Pinkley
Frank Pinkley,
Superintendent.

THE S Supplement

A series of vertical bars of varying heights and widths, some with a halftone dot pattern, running down the left side of the page.

A diamond-shaped logo containing the letters 'S' and 'M' separated by a small square.**MONTHLY REPORT**

THE 2ND SUPPLEMENT TO THE

REPORT OF THE
COMMISSIONERS OF THE
LAND OFFICE
FOR THE YEAR 1881

SWM LOAN LIBRARY

By Gertrude F. Hill,
Student Technician.

Librarians, no less than archeologists, are always deeply interested in the beginnings of events, however faint and difficult to read may be the traces. To write a report of the summer's work on the Headquarters Loan Library without including at least a brief resume of its humble inception would be much like confining one's studies in the field of southwestern archaeology to the great Pueblo III period of the Anasazi, with complete disregard for Basket-maker II and III or for related cultures.

EARLY HISTORY

The development of the present Headquarters Loan Library seems to have kept pace with the growth of the Casa Grande National Monument itself. Frank Pinkley (now Superintendent of Southwestern Monuments), who became custodian in 1901, formed the nucleus of the collection by assembling government pamphlets and other information relative to Casa Grande ruin. His efforts (not always successful, to be sure) extended over a considerable period of time, as indicated by early reports to Director Stephen T. Mather of the National Park Service. Outstanding among this early material was the 13th Annual Report of the Bureau of American Ethnology, 1891-92, containing Mindeleff's record of investigations at Casa Grande. This was later supplemented by Fewkes' work appearing in the 28th Annual Report for 1906-07 and in the Smithsonian Miscellaneous Collections, v. 50, part 3.

In 1918, the first list of books in the files was made and sent to Washington, "just to show what we had", as Superintendent Pinkley expressed it to the writer. From that year on, the growth of the collection was slow but pointed always toward a definite goal--the building up of a library of reference material which could be utilized by custodians and rangers alike.

LATER HISTORY

The years between are a bit misty, for lack of sufficient funds to permit the purchase of books formed a constant handicap. Not until 1937 was the annual apportionment for book purchase begun. Material which could be obtained by request was sent for, and a few volumes were bought for various members of the Southwestern Monuments personnel who particularly needed them for reference.

At the beginning of July, 1934, the library consisted of scientific papers, several numbers of the Bureau of American Ethnology Annual Reports, and other miscellaneous materials stacked under tables in the Files and Storage Room, together with geological, botanical, and zoölogical publications kept on shelves over the desks of various staff members using them. In October of the same year an effort was made to separate all the material in the field of anthropology and to place it in the Museum Preparation Room. The day after this project was completed,

the engineers invaded the "Library", taking it over for their working quarters, and the books were promptly returned to storage.

In August, 1935, wooden cases were obtained and the books collected and shelved. No attempts were made at cataloging, the volumes simply being recorded chronologically as they were received. A list of over 400 entries appeared in the Monthly Report for September, 1935, in order that the men in the field might have a fair idea of the material available to them. This was followed by a supplementary list of 30 items in the November report. The next year (1936) two more lists were published as a part of the Monthly Report supplements, one in July (127 volumes) and the other in October (48 volumes).

By September, 1936, the library covered the south wall of the old Naturalists' office. Housing space was fast becoming an acute problem. Before the close of that fiscal year, steel cases were ordered and the books installed toward the end of the summer.

The first real attempt to obtain standardized reference works was made during the fiscal year of 1936-37, at which time such volumes as Bailey: Birds of New Mexico, Spier: Yuman Tribes of the Gila River, Essig: Insects of Western North America, Ditmars: The Reptile Book, and others were purchased.

The past summer a really efficient loan system was adopted. This was copied from the one in use by Edwin McKee, Park Naturalist at the Grand Canyon. (This system will be discussed in detail further on in the report).

During May, 1937, the Branch of Education office was transferred from its crowded location in the Administration Building to three rooms in the front part of Quarters No. 1. The library now occupies a small room of its own, with a work table in front of the north windows and two sets of 6-tier sectional steel bookcases filling each of the end walls. Additional cases have been ordered in anticipation of further

growth.

The entire apportionment of \$100 for book purchase was spent during the fiscal year of 1936-37. At the beginning of the fiscal year of 1937-38, this sum (which is expected to supply the book needs of 16 active Monuments, as well as Headquarters) was reduced to \$75.

More than 400 books, pamphlets, and periodicals were added to the library during 1936-37. It is hoped that this will be at least equaled during 1937-38. Following is a partial list of donors to the library files:

Superintendent Frank Pinkley
Bureau of American Ethnology
Dr. Herman C. Bumpus, Advisory Board, National Park Service
Department of Anthropology, University of California
Department of Anthropology, Yale University
American Museum of Natural History
United States Geological Survey
Smithsonian Institution
Colorado Archaeological Society

SOUTHWESTERN MONUMENTS LOAN LIBRARY (CONT.)

National Park Service
United States Forest Service
National Resources Committee
United States National Museum
Office of Indian Affairs
Southwest Museum
Museum of Northern Arizona
School of American Research

It had long been the desire of the Superintendent and of the Educational Division personnel to have the library so classified and cataloged that its resources might be made more easily available to the men in the field and at the various monuments. With this idea in mind, a student technician who was an archaeologist, as well as a trained librarian, was selected for the fiscal year of 1937-38.

On the morning of June 3, 1937, the writer began her duties at the Southwestern Monuments Headquarters. The major project, as outlined for the summer, involved classifying, cataloging, and otherwise preparing the books in the library for use, and, if time permitted, the rearrangement and classification of the Educational Division's pamphlets and photographs. Monthly summaries of the work were to be written and included in the Branch of Education reports.

After discussing the matter at length with Junior Park Archeologist Charlie R. Steen, it seemed most practical to employ the Dewey Decimal System, the standard classification scheme used in most libraries, with modifications here and there to suit the special needs of this collection. The most pressing demands seemed to be for information on southwestern archeology, hence an immediate start was made on the preparation of that material.

About the middle of the month the library received a generous gift of 74 books, pamphlets, and indexes from the American Museum of Natural History, all dealing with some phase of anthropology. Since the funds for book purchase are so limited, these volumes, it is scarcely necessary to mention, filled a long-felt need in our collection. The cataloging of these and of our sets of the Bureau of American Ethnology Annual reports and Bulletins were the major tasks undertaken during June. For each Bulletin of the Bureau of American Ethnology and for the several articles included in the Annual Reports, complete author, subject, title and other cards (where necessary) were made, enabling one to locate a particular bit of information quickly.

From June 3 to June 28, 1937, the outstanding activities of the library may be summarized as follows:

Books cataloged:	337
Cards made:	
Author:	240
Subject:	463
Title:	178
Joint author and cross reference:	27
Shelf list and accession record:	672
Total cards made:	1,580

SOUTHWESTERN MONUMENTS LOAN LIBRARY (CONT.)

Books repaired:	22
Letters written:	4

Time expended:

Library activities:	166 hours (approximately)
Stenographic duties:	1 hour (approximately)

From June 28 to July 28, work progressed fairly rapidly. After helping to assemble the Southwestern Monuments Monthly Report for June, most of the librarian's time was devoted to cataloging, reference, and stenographic work. Efforts were concentrated on the preparation of our sets of the Smithsonian Institution Annual Reports and the National Geographic Magazine, the latter a project which involved typing 312 subject and 38 author cards covering the outstanding articles which might be of use in the work of the Educational Division. Complete files of the Southwestern Monuments Special Reports and Broadcast, and a partially complete run of the Monthly Reports were collected, cataloged, and made available for reference.

Growth of the library necessitated a good deal of shifting and rearrangement of the shelves. By the end of the month there were eleven cases of books completely classified, cataloged, marked, and in use, with twelve additional shelves, all full, awaiting cataloging. A marked increase in the writer's stenographic duties somewhat curtailed the amount of library work accomplished.

Summary of activities from June 28 to July 28, 1937:

Books cataloged:	186
Cards made:	
Author:	261
Subject:	796
Title:	96
Joint author and cross reference:	48
Shelf list and accession record:	321
Total cards made:	1,522

Books repaired:	3
Letters written, stencils cut, sketches made, etc.:	49

Time expended:

Library activities:	185 hours, 55 minutes
Stenographic duties:	14 hours, 5 minutes

During the month of July the library received the following:

- 1 book
- 5 periodicals
- 6 pamphlets

From July 28 to August 28, work was confined primarily to the cataloging of geological, botanical, and zoölogical materials in the library. During the early part of August the writer again assisted with the Monthly Report, prepared two order lists of archeological publications for the

SOUTHWESTERN MONUMENTS LOAN LIBRARY (CONT.)

Custodian at Casa Grande, and handled several miscellaneous bits of reference work for outsiders and for personnel of various monuments.

That once out of the way, our main project centered in the cataloging of the library's remaining files of periodicals--The American Anthropologist, The New Mexico Historical Review, El Palacio, The Master-key, Museum Notes, Natural History, American Antiquity, and others. Plans have been made to type author and subject analytics for the outstanding articles in several of these publications later on when press of duties has lessened somewhat.

Stenographic work consumed a generous portion of the librarian's time this month. Since our apportionment for book purchase is pitifully inadequate, numerous letters were written in quest of free materials which could be utilized in our reference work. Attempts were also made to fill in missing numbers of various publications in the library files, such as Indians at Work, Southwestern Lore, and the Bureau of American Ethnology Annual Reports and Bulletins. Consequently, new material flowed into the office in an almost steady stream, as indicated by the following record of publications received from August 1 to August 28:

Periodicals:	38
Pamphlets:	31
Books:	11
Reprints:	2

Repairing of our books was greatly facilitated by the acquisition of a new steel table, the mending record showing a marked increase over that for the two months previous.

The librarian spent the entire morning of August 16th rearranging the shelves and otherwise making room for the rapidly expanding collection. From the eleven cases occupied last month, the number increased to eighteen, with five cases of uncataloged material, chiefly old reports and other publications not particularly needed at present, awaiting cataloging when time permits.

Summary of activities from July 28 to August 28, 1937:

Books cataloged:	351
Cards made:	
Author:	201
Subject:	425
Title:	107
Joint author and cross reference:	37
Shelf list and accession record:	636
Total cards made:	1,406

Books repaired:	58	(this included new covers
Letters written:	53	for many of them)

Time expended:

Library activities:	182 hours 55 minutes
Stenographic duties (including work on assembling the	
Monthly Report):	14 hours 50 minutes

From August 28th to the expiration of the writer's duties at noon on

SOUTHWESTERN MONUMENTS LOAN LIBRARY (CONT.)

September 8th, a number of miscellaneous tasks were handled, in addition to the usual classification and cataloging. A portion of the afternoon of August 30th and the entire morning of the 31st were spent in separating and rearranging the Educational Division's files of Monthly and Special Reports. Several mornings and evenings were likewise consumed in the preparation of this report for the Regional Office. Stenographic work occupied only a small portion of the librarian's time.

A complete count of material in the library and at the various Monuments under our jurisdiction was made. Records show that to September 8, there are 1249 accessioned books, periodicals, pamphlets, and reprints, with 222 additional unaccessioned miscellaneous pieces. This does not include a file of some 500 pamphlets and reprints arranged alphabetically by subject.

The greater part of September 3, 4, and 6 was spent classifying, cataloging, and otherwise preparing the Casa Grande National Monument library. A brief explanation of the Dewey System and some instruction in the use of the catalog were given the Custodian.

Summary of activities in the Casa Grande library:

Books cataloged:	41
Cards made:	
Author:	50
Subject:	90
Title	31
Joint author and cross reference:	2
Shelf list and accession record:	83
Total cards made:	256

One entire day was devoted to instructing the Park Naturalist in the routine of classification and cataloging. The Dewey System was explained in detail, practice problems were given, and drill in the use of the catalog was conducted. The remainder of the librarian's time was spent in cleaning her typewriter and turning in equipment.

Summary of activities from August 28 to September 8:

Books cataloged:	25
Cards made:	
Author	20
Subject:	50
Title:	4
Joint author and cross reference:	1
Shelf list and accession record:	44
Total cards made:	199

Books repaired:	6
Letters written	6
Envelopes addressed:	35

Time expended:

Library activities:	71 hours 35 minutes
Stenographic duties:	2 hours 25 minutes

SOUTHWESTERN MONUMENTS LOAN LIBRARY (CONT.)

Publications received:

Periodicals:	36
Pamphlets:	8
Books:	1
Reprints:	1

THE SUMMER'S WORK AT A GLANCE, JUNE 3 TO SEPTEMBER 8, 1937

Books cataloged:	899
Cards made:	
Author:	722
Subject:	1,734
Title:	385
Joint author and cross reference:	113
Shelf list and accession record:	1673
Total cards made:	4,627

Books repaired:	89
Letters written:	112

Time expended:

Library activities:	606 hours 25 minutes
Stenographic duties:	32 hours 20 minutes

The above totals do not include the work done on the Casa Grande National Monument library.

A report on the summer's work in the library would not be complete without at least a general outline of the materials and techniques employed. As aids in book classification, the writer's personal copies of the Dewey Decimal Classification and Relative Index and the second edition of Sears "List of Subject Headings for Small Libraries" were used. Slight modifications and alterations were made wherever necessary, to permit adjustment of the materials in process to our special needs. Frequent consultations were held with the Junior Archeologist and the Park Naturalist as to which particular classification number would be most useful for certain types of books and pamphlets.

The librarian was a trifle handicapped at times by lack of maps, a dictionary, and sources of information concerning authors' full names. The main office possessed a dictionary, but consulting it meant a ten or so minutes' trip up and back. It was found most practicable, wherever possible, to accumulate material which needed looking up and then to dispose of it all at once. With the aid of a fairly recent copy of Who's Who in America, various Conoco Travel Bureau maps, and the writer's own southwestern bibliographical file, most problems were overcome quite readily. The partially complete accession record which had been begun prior to my arrival proved an invaluable aid.

As has been mentioned previously, our work was done under the Dewey Decimal System. This scheme of classification, in brief, divides all knowledge into ten main classes numbered from 0 through 9, thus:

- 000 General works, such as encyclopedias, bibliographies, etc.
Here are placed books dealing with museums and library science.
- 100 Philosophy
- 200 Religion
- 300 Sociology
- 400 Philology
- 500 Natural science: geology, botany, zoölogy, and the like
- 600 Useful arts: agriculture, chemical technology, engineering, etc.
- 700 Fine arts: painting, sculpture, furniture, house decoration, etc.
- 800 Literature
- 900 History, including archeology, travel, etc.

Each class is, in turn, separated into nine divisions, and the divisions are split into nine sections. The latter may be further subdivided. In this manner, all books dealing with a specific subject stand together on the shelf under the same class number. The Dewey System has the advantage of being very flexible, easy to use, and capable of expansion to keep pace with the growth and needs of the library in which it is employed.

A step-by-step outline of what goes on when a book is cataloged might not be amiss here and will present a fair idea of how the majority of the writer's time was spent this summer. The incoming volume is first accessioned, that is, numbered chronologically as it enters our files. The librarian next looks the book over to determine the subject or subjects treated. She reads the title page, the introduction, and, if necessary, a few pages here and there in the text. Her mind satisfied as to the nature of the material, she used the Dewey Decimal Classification and Relative Index for selecting a suitable class number to cover the contents of the volume in process. In choosing this class number the special nature of the library and the specific purpose for which the book will be used must be kept constantly in mind. Will a book be of more use in such and such a group, or would it be better placed somewhere else?

After a suitable class number has been assigned, subject headings are chosen to assist the user of the catalog in locating the information he needs. The selection of these is governed by the type of material contained in the book, as well as by related materials already in the library. From the "List of Headings for Small Libraries" come the correct forms to use (in order that the completed card catalog may be uniform) and kindred subjects to which the information-seeker may refer.

Archeology - Arizona

Arizona - Description and travel

Furniture, Spanish

The West - History

are a few examples selected at random. where possible, the full name of the author is obtained for use on the main entry card.

Next comes the actual process of cataloging--the typing of the material described above in such form as to constitute a permanent record.

SOUTHWESTERN MONUMENTS LOAN LIBRARY (CONT.)

For this purpose, plain white 3" x 5" cards, heavy enough to stand upright in the catalog drawers, are used. For each book the following cards are usually made:

Author: On this card goes the full name of the author, in addition to all necessary information printed on the title page of the book itself. This includes title of the book, subtitle (if present), edition, volume, place, publisher, and date of publication. The number of pages, illustrations, maps, tables, diagrams, etc. are also added. (See Plate 1, Sample I).

Subject: Often more than one subject card is required to cover the contents of a book thoroughly. This card is like the author entry, save that the subject occupies the top line and only the initials of the author's given names are used. (See Plate 1, Sample II).

Title: Title cards are made in the case of an outstanding title under which a book might be asked for, such as "Our Friendly Birds", "After Coronado", "Hopi Katchinas Drawn by Native Artists", etc. (See Plate 2, Sample III).

Shelf list: This consists of a card for each book or each volume of a set, on which is typed the classification number, author, and title of the book, with the accession number. Two spaces below are listed all entries for that book to be found in the catalog. This is for the purpose of removing cards from the catalog, in case the volume becomes lost and cannot be replaced immediately. These are arranged in the librarian's private files by classification number, running from 000 through 900. (See Plate 2, Sample IV).

Accession record: Each book, when received, is given a chronological number, beginning with Number 1 for the first book ever to be entered on the record, Number 2 for the second, and so on, as long as the library exists. No two books can have the same accession number. This accession number appears on the shelf list card and also on the accession record card, together with the title and author of the book. These are arranged in the librarian's files chronologically by number, as 1, 2, 3, etc. Some libraries use a regular accession book instead of the cards, but since our record had already been begun that way, it seemed best to continue. (See Plate 3, Sample V).

Additional cards may be made for:

Joint author: Used only when there is more than one author for a book and that author (or authors, as the case may be) is well known in his field or may be of local interest. (See Plate 3, Sample VI).

Cross reference: These are of two types: (1) "See" references, referring from a subject heading not used to one which is substituted in its place (See Plate 4, Sample VII). (2) "See also" references, referring from one subject to other related subjects. (See Plate 4, Sample VIII).

Added entry: Made for editors, illustrators, etc. when deemed of sufficient importance to warrant entry in the catalog. (See

Plate 5, Samples IX and X)

After having typed the necessary catalog cards, the librarian looks them over with the books in front of her, to be sure that no errors have been made in copying information from the title page. The class number of the book is written on the verso of the title page to facilitate marking of the book when the time comes. Each card is proofread for possible typographic errors, corrected if necessary, cleaned, and placed in its appropriate file (author, title, subject, etc.) until the complete count of cards is made at the end of each month.

From the librarian's desk the books go to the work table to be marked or repaired. Marking means simply lettering the class number in ink on the lower spine of the volume so that it may be readily located upon the shelf. White or black ink is used. Because of unsuitable binding, it is occasionally found necessary to cover a portion of the back with white enamel and to place the figures upon that. When thoroughly dry, the number is covered with a thin coat of transparent shellac to prevent its wearing off. All needed repairs on books are likewise performed at this time. These range all the way from inserting loose pages to making complete new covers for damaged volumes. After the shellac has dried thoroughly (usually overnight), the official stamp of the Headquarters Library is placed upon the title page of the book, and the volume is ready to be shelved in its proper place.

The collected catalog cards are retained in the librarian's files until the end of each month, at which time a complete count by type is made. All cards, except the accession and shelf list sets (which belong to the librarian's private files) are arranged alphabetically by the first word not an article on the top line of the card, regardless of whether it be author, title, subject, or other type of entry. Together these cards form what is known as the catalog and are placed in regular 3" x 5" files where they are easily available for consultation.

A good catalog should answer at least three outstanding questions for its user: (1) What books does the library have by a certain author? (2) Does the library have a book with a certain title? (3) What books does the library have on a certain subject and its related subjects?

For example, a park naturalist wishes information on cacti. He opens the catalog drawer labeled C, looks down the files until Ca is reached, moves to the subject heading CACTI, and finds several books dealing with his subject under the headings CACTI, CACTI - ARIZONA, CACTI - PHYSIOLOGY, and so on. He reads the classification number for his chosen book, sees it is 583.471, goes to the shelves, skips past the 000, 100, 200, 300, and 400 sections until he reaches the 500's, then moves through 510, 520, 530, etc., until 580 is reached, then slowly down through the 580's to 583.471. Here he finds the books are arranged alphabetically by author under the class number. He seizes his selection with eager fingers and departs rejoicing, after having the volume properly checked out to him by the librarian.

We have two systems for charging our books at Headquarters--one for Permanent issues and one for those On loan. The former, made on 3" x 5"

913.72 Spinden, Herbert Joseph

Ancient civilizations of Mexico and Central America. 3d and rev. ed. New York, American Museum of Natural History, 1928. (Handbook series, No. 3)

271 p. illus. plates. maps.

Bibliography, pp. 255-258

Sample I.

913.72 ARCHEOLOGY - MEXICO

Spinden, H. J.

Ancient civilizations of Mexico and Central America. 3d and rev. ed. New York, American Museum of Natural History, 1928. (Handbook series, No. 3)

271 p. illus. plates. maps.

Bibliography, pp. 255-258.

Sample II.

PLATE I.

Ancient civilizations of Mexico and Central America

Spinden, H. J.

Sample V.

913.793 Harrington, Mark Raymond, joint author
Loud, L. L. and Harrington, M. R.

Lovelock cave. Berkeley, Calif., University
of California Press, 1929. (University of
California publications in American archaeology
and ethnology, v. 25, no. 1)

viii, 183 p. illus. plates. maps.

Sample VI.

PLATE III.

Ethnography

see

Ethnology

Sample VII.

Botany

see also

Berries

Ferns

Flowers

Sample VIII.

PLATE IV.

978.9 Baldwin, Percy M., tr.
 Marcos de Niza, Fray
 Discovery of the seven cities of Cibola; tr.
 and ed. by Percy M. Baldwin. Albuquerque New
 Mexico, El Palacio Press, 1926. (Historical
 Society of New Mexico. Publications in history,
 v. 1)
 59 p. map.

 Spanish and English text.

Sample IX

917.3 Story, Isabelle F.
 Yard, R. S.
 The national parks portfolio; rev. by Isabelle
 F. Story. 5th ed. Washington, Government
 printing office. 1928. (U. S. Dept. of the
 Interior, National Park Service)
 270 p. illus. map.

Sample X.

PLATE V.

NAVAJO NATIONAL MONUMENT

1. How to collect and preserve insects, by Lutz.
Property transfer, Oct. 17, 1935.
2. The preparation of rough skeletons, by Lucas.
Property transfer, Oct. 17, 1935.
3. The capture and preservation of small mammals for
study, by Anthony.
Property transfer, Oct. 17, 1935.
4. Arizona cacti, by Stockwell.
Property transfer, Nov. 19, 1935.

Sample I.

[illegible]

Sample II.
PLATE VI.

catalog cards, contains the list of books issued to Monuments and constituting part of their regular equipment. These are filed alphabetically under the name of the Monument. The On Loan cards take care of books issued for temporary retention only. These are special cards with the author, title, and accession number of each book and are kept filed alphabetically by author in the librarian's records. (See Plate 6, Samples I and II)

In closing this report, there is one point which I wish to impress firmly upon the minds of all who read it, namely: An adequate and well-cataloged library is the foundation of any Educational Division, the right hand of the Museum, and the best friend of the custodians, rangers, and naturalists. Money expended for books and their upkeep is money well invested.

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RODENT PROBLEMS, CHACO By A. E. Borell, associate wildlife technician.

From 4:00 p. m. July 18 until 4:30 p. m. July 19, 1937 the writer made observations on rodent problems at Chaco Canyon National Monument, Chaco Canyon, New Mexico.

I had not been at Chaco Canyon since May and June 1936, when rodent control was undertaken about the levees and dams constructed by the Soil Conservation Service (see special report of July 1, 1936). At that time we used carbon-bisulphide gas and traps to remove practically all of the small rodents (kangaroo rats (2 species), Antelope ground squirrels, white-footed mice, and pocket mice) from the levees and from the area within 100 yards of each. In March and April of this year, a Navajo Indian employed by the Soil Conservation Service trapped over the same area and reported that he trapped over 1,200 rodents.

Observations on my present visit indicated that the rodents listed above are just as numerous over the Monument as they were before and almost as numerous about the levees where large numbers have been killed by gas and traps. There are more burrows in the levees now than there were in June, 1936.

ANTELOPE GROUND SQUIRRELS (Ammospermophilus) are not very abundant but are much more in evidence now than in May and June, 1936. This species and Kangaroo rats are responsible for most of the burrows in the levees.

PRAIRIE DOGS have increased and established themselves in two areas where they were not observed in 1936. This species is doing little

or no physical damage to the levees but naturally are affecting the vegetation about their towns.

COTTONTAILS have increased very noticeably. In June, 1936, they were fairly common but now they are abundant. I counted 40 between 7:30 and 9:30 a. m., July 19 while driving over a five-mile round trip east of Headquarters. I estimate that cottontails have increased at least five fold since June, 1936.

I saw two cottontails take refuge in the large burrows of banner-tailed kangaroo rats. It is possible that removal of this large species of kangaroo rat by traps and gas has provided additional homes for the rabbits and thereby improved conditions for them. However, it is more likely that the cottontails are approaching one of those cycles of heavy population which occurs every few years among the rabbits in various localities.

No attempt has ever been made to reduce the number of rabbits in Chaco Canyon. They are doing no damage to the soil erosion project other than through the consumption of vegetation. Early this spring they did a little damage to young willow, cottonwood and tamarisk which had been planted by the Soil Conservation Service. Since the rains and growth of green vegetation there has been no further damage to young trees.

SOIL EROSION LEVEES: A week ago, a portion of Chaco Canyon near Pueblo Bonito experienced a short but very heavy rain. This rain damaged the long levee which runs west from Pueblo Bonito. A portion of this levee washed out and the spillway was damaged. Examination showed without question that the break in the levee was not the result of rodent burrows. Flood waters went over the top of the levee and began cutting from the top and outside of the levee. In general the structures are holding and are rapidly becoming revegetated. Most of the vegetation on the new levees is Russian thistle. If these structures are kept in repair they should do considerable toward checking the serious erosion which has been going on for several years. Young trees planted in the washes are thriving but those planted about levees are mostly dead, probably due to lack of moisture.

DOMESTIC STOCK: Although the Monument has been fenced and sheep excluded, there is still some grazing by horses and cows. In addition to the vegetation consumed, these heavy animals do considerable damage through breaking the soil surface which here is very unstable.

I was told that the National Park Service expects to establish a camp of fifteen or twenty Navajos, just above Pueblo Bonito, to conduct ruin stabilization. These Indians now live at home and make daily trips into the Monument to work. If they are established in a camp in the canyon, it is probable that many of them will want to bring their families and saddle horses. It should be definitely understood that

RODENT PROBLEMS AT CHACO CANYON (CONT.)

their horses cannot be grazed in the Monument. It takes quite a few rabbits to eat as much as a horse or cow.

RODENT DAMAGE TO RUINS: Ranger Hastings showed me several places where rodents (probably kangaroo rats and antelope ground squirrels) have been burrowing into the walls of the ruins. This problem can be easily handled by trapping with rat traps or No. 0 steel traps by the Custodian or Ranger.

CONCLUSIONS

I. Periodic control of rodents on and about the soil erosion structures does very little good, and permanent reduction of the rodents over the whole canyon is not practical. I saw several occupied burrows so located that they might cause breaks when a large flow of water is retained by the levees. Some one could go over the levees once a month and trap or gas the rodents which are living in burrows in the levees. This would be a small job and I believe would produce worthwhile results. Burrows should be caved in and filled up after the rodents are killed.

II. Cottontails are becoming overly abundant but at present are doing no serious damage other than through consumption of vegetation. Artificial control is not practical. It is likely that they will reach a peak population within the next year or two then will decline sharply.

III. Effort should be made to keep the grazing of horses and cows in the Monument down to a very minimum. The sooner vegetation is brought back, the sooner erosion will be checked.

IV. Rodents are doing some damage to ruin walls and should be systematically removed by trapping and the borrows filled with mud or stones.

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LIBRARY LIST

Continued below is the accession list of the Southwestern Monuments Loan Library, printed here so that field men can obtain a rough idea as to the library's contents. The October, 1936, Supplement carried the list through No. 586.

588 - The archaeological survey of the high western plains: eighth report, by E. B. Renaud.

589 - Specimen catalog, Aztec ruin, 1916, by E. H. Morris.

590 - Report of the Charles L. Bernheimer expeditions, 1922-1930, by

LIBRARY LIST (CONT.)

C. L. Bernheimer.

- 591 - Culture of sites which were occupied shortly before the eruption of Sunset Crater, by J. C. McGregor.
- 596 - Yokuts and Western Mono pottery-making, by A. H. Gayton
- 597 - Yokuts-Mono chiefs and shamans, by A. H. Gayton.
- 598 - The ghost dance of 1870 in South-Central California, by A. H. Gayton.
- 599 - Klamath Ethnography, by Leslie Spier.
- 600 - Plains Indian parfleche designs, by Leslie Spier.
- 601 - Cultural relations of the Gila River and lower Colorado tribes, by Leslie Spier.
- 602 - The Sun Dance of the Plains Indians, by Leslie Spier.
- 605 - Tribal Distribution in Washington, by Leslie Spier.
- 606 - The Pleistocene Geology of Nebraska, by A. L. Lugen.
- 612.- After Cornnado, by A. B. Thomas
- 613 - Spanish Interiors, Furniture and Details, by H. D. Eberlein.
- 614 - Geology and Paleontology of the Raton Mesa and Other Regions in Colorado and New Mexico, by W. T. Lee and F. H. Knowlton.
- 615 - Contributions to the Geography of the United States, 1923-1924, by M. R. Campbell.
- 616 - Vegetable Dyes Bulletin, New Mexico Department of Vocational Education.
- 617 - Spanish Colonial Furniture Series, New Mexico Dept. of Vocational Education.
- 618 - Tanning Bulletin, New Mexico Department of Vocational Education.
- 619 - Spanish Colonial Furniture Bulletin, New Mexico Department of Vocational Education.
- 620 - New Mexico Colonial Embroidery, New Mexico Department of Vocational Education.

LIBRARY LIST (CONT.)

- 621 - Journal of the Siege of Yorktown, by Baron Gaspard de Gallatin.
- 622 - Routes to Desert Watering Places in the Lower Gila Region, Arizona, by C. P. Ross.
- 623 - Annual Report of the Smithsonian Institution, 1935.
- 625 - Food Habits of Common Hawks, by W. L. McAtee.
- 627 - The Migration of North American Birds, by F. C. Lincoln.
- 628 - Wildlife Restoration and Conservation, North American Wildlife Conference.
- 629 - Field Manual of Prehistoric Southwestern Pottery Types, by F. M. Hawley.
- 630 - Contributions to the Ethnography of the Kutchin, by Osgood, Cornelius.
- 631 - The Basaltic Cinder Cones and Lava Flows of the San Francisco Mountain Volcanic Field, by H. S. Colton.
- 632 - The National Geographic Society-U. S. Army Air Corps Stratosphere Flight of 1935 in the Balloon "Explorer II"
- 633 - Mammals, by Degerbol, Magnus and Freuchen, Peter.
- 634 Egyptian Stelae in Field Museum of Natural History, by T. G. Allen.
- 635 - The American Bats of the Genera Myotis and Pizonyx, by G. S. Miller, Jr. and G. M. Allen.
- 636 - Fire as an Agent in Human Culture, by Walter Hough.
- 637 - Ferns and Flowering Plants of Isle Royale, Michigan, by C. A. Brown.
- 638 - Vertebrate Animals of Point Lobos Reserve, 1934-35, by Joseph Grinnel and J. M. Linsdale.
- 641 - Archaic Culture Horizons in the Valley of Mexico, by A. L. Kroeber.
- 643 - Prehistoric Settlements of Sonora, with Special Reference to Cerros de Trincheras, by Carl Sauer and Donald Brand.
- 644 - Pueblo Sites in Southeastern Arizona, by Carl Sauer and Donald Brand.
- 645 - Ethnography of the Yuma Indians, by C. Daryll Forde.
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- 652 - History, Ethnology and Anthropology of the Aleut, by Waldemar Jochelson.
- 653 - Aztatlan, Prehistoric Mexican Frontier on the Pacific Coast, by Carl Sauer and Donald Brand.
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- 655 - Textile Periods in Ancient Peru, by Lila M. O'neale and A. L. Kreeber.
- 656 - Atitlan, An Archaeological Study of Ancient Remains on the Borders of Lake Atitlan, Guatemala, by Samuel K. Lothrop.
- 657 - Cuicuilco and The Archaic Culture of Mexico, by Byron Cummings.
- 658 - The Ethnography of the Tanaina, by Osgood, Cornelius.
- 659 - The Cocopa, by E. W. Gifford.
- 660 - Early Cultures of the Valley of Mexico, by G. C. Vaillant.
- 661 - Excavations at Gualupita, by Mrs. S. B. Vaillant and G. C. Vaillant.
- 662 - Pueblo Ruins of the Galisteo Basin, New Mexico, by N. C. Nelson.
- 663 - A Folsom Complex, by F. H. H. Roberts, Jr.
- 664 - Pueblo Milling Stones of the Flagstaff Region and their Relation to Others in the Southwest, by Katherine Bartlett, Bulletin 3 of the Museum of Northern Arizona, Flagstaff, Arizona.
- 665 - An Archeological Survey of the Twenty Nine Palms Region, by Elizabeth W. Crozer Campbell, Southwest Museum Papers No. 7.
- 666 - Excavations at Casa Grande, Arizona in 1906-07, reprinted from the Smithsonian Miscellaneous Collections, Vol. 50, Part 3, by

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- 667 - Excavations at Case Grande, Arizona, Feb-May, 1937, Southwest Museum Papers No. 2., by Harold S. Gladwin, Southwest Museum, Los Angeles, California.
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- 678 - The Seri. Southwest Museum Papers, No. 6, by A. L. Kroeber.
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- 680 - Penobscot Shamanism, Memoirs of the American Anthropologist, by Frank G. Speck.
- 681 - Excavations at Ticoman, Anthropological Papers of the American Museum of Natural History, by George C. Vaillant.
- 682 - Excavations at Zacatenco, Anthropological Papers of the American Museum of Natural History, by George C. Vaillant.
- 683 - Notes on the Somatology and Pathology of Ancient Egypt, by R. Wood Leigh.
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- 690 - Report on Archaeological Reconnaissance in the Rainbow Plateau Area of Northern Arizona and Southern Utah. Based upon Field Work by the the Rainbow Bridge--Monument Valley Expedition of 1933, by Lyndon Lane Hargrave, University of California Press.
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- 702 - Notes on Hopi Economic Life, by Ernest Beaglehole.
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- 719 - The Kamia of Imperial Valley, by E. W. Gifford.
- 720 - Tobacco Among the Karuk Indians of California, by J. P. Harrington.
- 721 - Contributions to Fox Ethnology--II, Truman Michelson.
- 722 - Early Pueblo Ruins in the Piedra District, Southwestern Colorado, by F. H. H. Roberts, Jr.
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- 724 - Pawnee Music, by Frances Densmore.
- 725 - Tuberculosis Among Certain Indian Tribes of the United States, Bulletin 42, BAE of the Smithsonian Institution, by Ales Hrdlicka.
- 726 - A structural and lexical comparison of the Tunica, Chitimacha, and Atakapa languages, by J. R. Swanton.
- 727 - Observations on the Thunder dance of the Bear gens of the Fox Indians, by Truman Michelson.
- 728 - Contributions to Fox Ethnology, by Truman Michelson.
- 729 - Myths and Tales of the Southeastern Indians, by J. R. Swanton.
- 730 - Kutenai Tales, by Franz Boas.

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- 734 - Additional Studies of the Arts, Crafts, and Customs of the Guiana Indians, by W. E. Roth.
- 735 - Ethnobotany of the Tewa Indians, by W. W. Robbins and others.
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- 737 - The Swimmer Manuscript, by James Mooney.
- 738 - Antiquities of the Upper Gila and Salt River Valleys in Arizona and New Mexico, by Walter Hough.
- 739 - Vocabulary of the Kiowa Language, by J. P. Harrington.
- 740 - Burials of the Algonkian, Siouan and Caddoan Tribes West of the Mississippi, by D. I. Bushnell, Jr.
- 741 - Notes on the Buffalo-head Dance of the Thunder gens of the Fox Indians, by Truman Michelson.
- 742 - Early History of the Creek Indians and Their Neighbors, by J. R. Swanton.
- 743 - Analytical and Critical Bibliography of the Tribes of Tierra del Fuego and Adjacent Territory, by Frances Densmore.
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- 749 - Ethnographical Survey of the Miskito and Sumu Indians of Honduras and Nicaragua, by Eduard Conzemius.
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- 769 - 771 -- Zuni Potsherds, by A. L. Kroeber.
- 772 - 776 -- Indians of the Southwest, by P. E. Goddard.
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- 780 - A Report on the Geology of Rocky Mountain National Park, by W. L. Effinger.
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- 782 - Burials in the Aztec Ruin, the Aztec Ruin Annex, by E. H. Morris.
- 783 - Burials in the Aztec Ruin, the Aztec Ruin Annex, by E. H. Morris.
- 784 - Notes on Excavations in the Aztec Ruin, by E. H. Morris.
- 785 - Notes on Excavations in the Aztec Ruin, by E. H. Morris.
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- 793 - A Report on the Geology of Rocky Mountain National Park, by W. L. Effinger.
- 794 - Notes on Some Little Colorado Ruins, by Leslie Spier.
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- 796 - 797 Zuni Kin and Clan, by A. L. Kroeber.
- 798 - San Carlos Apache Texts, by P. E. Goddard.
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- 804 - 808 -- Basketry of the Papago and Pima, by M. L. Kissell.
- 809 - Essentials of Anthropometry, by H. L. Shapiro.
- 810 - The Beginnings of Pottery Making in the San Juan Area, by E. H. Morris.

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- 822 - 823 -- Hopi Kinship, by R. H. Lowie.
- 824 - Myths and Tales from the San Carlos Apache, by P. E. Goddard.
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- 843 - Thirteenth Annual Report of the Bureau of American Ethnology, Smithsonian Institution, 1891-92.
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- 845 - Fourteenth Annual Report, 1892-1893, U. S. Bureau of American Ethnology, Part I.
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- 855 - Localization of Tusayan Clans, Extract from the 19th Annual Report of the Bureau of American Ethnology, of the Smithsonian Institution.

RUMINATIONS

of a man who has just lost
ten thousand dollars.

At last we have received our allotments for the current fiscal year and at the end of the first quarter of the year have our books set up.

This is the first time in my thirty-odd years of serving the Government that we have had to guess our way through a quarter of the year before we actually knew how our funds stood and you can take a field man's word for it, it is pretty hard on the nerves, temper, and vocabulary.

We knew by June, barring some unexpected quirk of fate, how much Congress was going to give us. A month later we knew we were going to get only 90% of that allotted, due to the administrative cut which is to balance the budget this year. That meant cutting right down to the bone, for we had no ten percent of fat any place around our appropriation after the Bureau of the Budget had finished with our original estimates.

Then came the saddest news of all. With the year one fourth gone, we received our outline of work and found another slice had been taken out of our money in order to finance the new Park Service Regional Officer's salary and that of his helper. This last is no great amount in itself but if, after draining a couple of quarts of blood out of a man, you cheerfully ask him for just another cup full, he is likely to think of it as a whole lot of blood and consider, as the English so thoughtfully put it, that he is being had.

If the boys out on the lone posts have tears to shed, they had better prepare to shed them now. Some of them who have been with us eight or ten years and are preparing to settle down and stay may think they know what economy is from some of those lean and hungry years we have behind us. Take it from us, our hardest year is ahead of us. It will startle them to know that one of the measures we have had to consider as we look down the months ahead of us is a furlough without pay for everybody on the force for part of one month in order to balance our budget at the end of the year.

About the only satisfaction we can dig out of this situation is that when it came to making real savings; to making both ends meet without any red ink; to making one dollar do the work of two or three; to doing without necessities; they certainly came to the right outfit when they came to us! Going without isn't one of the sports we are fondest of, but we do happen to know a lot about it!

I think our growth through the past few hectic years has been a solid one. I don't think we have any softies with us who will really squal and lie down when the going gets tough; if we have, this hard year that is coming will be a blessing to us for showing up these weak spots.

RUMINATIONS (CONT.)

Anybody can hold a job where the going is good and there are plenty of funds, but this year we are going to have to ask our fellows to take the old belt in a couple of holes and get along on a little less than they ever have before, and now and then in the past we have had pretty hard sledding, too.

We are also going to ask them to keep all this inside the family; to yowl neither to the high heavens nor into the ear of the visitor. We didn't invent this game nor make the rules under which it is run, and it may not feel good to get trimmed for ten thousand chips in playing it, but the gods of the Southwest love a good loser, and so, incidentally, do the visitors; so we won't bother either of them with protestations.

After ruminating on it, I guess it is all right, Chief. We have led with our chin a good many times in the years of the past, and once more won't kill us. We have always had more job than we had funds to run it, so there's nothing novel about that part of the situation. We do hate to have to stand idle in so many ways this year and let the job get that much ahead of us, but we will do all we can under the handicap and I can foresee that at the end of the year we won't have a white chip left, but the boys will all be grinning and saying: "Well, we made the grade but wasn't she a corker!" All, that is to say, except one, and he will probably be saying: "Shucks, that was nothing. Why, you remember, don't you Al, just after the war,--" and he, of course, will be

The Boss

SOUTHWESTERN MONUMENTS

MONTHLY REPORT



O C T O B E R - - - 1 9 3 7

DEPARTMENT	OF	THE	INTERIOR
NATIONAL	PARK	SERVICE	

SOUTHWESTERN MOVEMENTS
OCTOBER, 1937, REPORT

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CONDENSED GENERAL REPORT

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SOUTHWESTERN MONUMENTS PERSONNEL

HEADQUARTERS, Southwestern Monuments, Coolidge, Arizona: Frank Pinkley, Superintendent; Hugh M. Miller, Assistant Superintendent; J. H. Tovrea, Assistant Engineer; Dale S. King, Assistant Park Naturalist; Charlie R. Steen, Junior Park Archeologist; Natt N. Dodge, Junior Park Naturalist; Millard Singerman and Luis A. Castellum, Clerk-stenographers; Ira G. Goodwin and William Sharpe, CCC Clerks; F. E. Stonehocker, Machinist; J. L. L. Paeher, Utility man.

<u>FIELD STATIONS</u>	<u>AREA (Acres)</u>	
1. <u>Arches</u> - Moab, Utah, Harry Reed, Custodian - - - - -	4,520.	
2. <u>Aztec Ruins</u> - Aztec, N. M., T. J. Miller, Custodian- - - H. Summerfield Pay, Park Ranger-archeologist.	25.88	
3. <u>Bandelier</u> - Santa Fe, N. M., C. G. Harkins, Custodian- -	26,026.20	
4. <u>Canyon de Chelly</u> - Chin Lee, Ariz., Johnwill Faris, Cu.-	83,840.	
5. <u>Capulin Mountain</u> - Capulin, N. M., Homer Park, Custodian	680.37	
6. <u>Casa Grande</u> - Coolidge, Ariz., A. T. Bicknell, Custodian J. Donald Erskine, Park Ranger.	472.50	
7. <u>Chaco Canyon</u> - Chaco Canyon, N. M., L. T. McKinney, Cu.-	21,512.37	
8. <u>Chiricahua</u> - Douglas, Ariz., Frank L. Fish, Custodian- - Homer Bennett and Elijah Alton, CCC Guides.	4,480.	
9. <u>El Morro</u> - Ramah, N. Mex., Robert R. Budlong, Custodian-	240.	
10. <u>Gila Cliff Dwellings</u> - Cliff, N. M. No Custodian- - - -	160.	
11. <u>Gran Quivira</u> - Gran Quivira, N. M., George L. Boundey, Cu.	610.94	
12. <u>Hovenweep</u> - T. C. Miller, Aztec, N. Mex. in charge - - -	285.80	
13. <u>Montezuma Castle</u> - Camp Verde, Ariz., Earl Jackson, Cu.- Jesse L. Jennings, Park Ranger.	560.	
14. <u>Natural Bridges</u> - Blanding, Utah, Zeke Johnson, Cu.- - -	2,740.	
15. <u>Navajo</u> - Kayenta, Arizona, John Wetherill, Custodian- - Milton Wetherill, Park Ranger-historian.	360.	
16. <u>Organ Pipe Cactus</u> - Ajo, Arizona, No Custodian - - - - -	330,670.	
17. <u>Pipe Spring</u> - Moccasin, Ariz., Leonard Henton, Actg. Cu.	40.	
18. <u>Rainbow Bridge</u> - Tonalea, Arizona, No Custodian- - - - -	160.	
19. <u>Saguaro</u> - Tucson, Arizona, No Custodian- - - - -	63,284.	
20. <u>Sunset Crater</u> - Flagstaff, Ariz., David Jones in charge-	3,040.	
21. <u>Tonto</u> - Roosevelt, Arizona, Thomas Onstott in charge - -	1,120.	
22. <u>Tumacacori</u> - Tucson, Ariz., Box #225, L. R. Gaywood, Cu.	10.	
23. <u>Walnut Canyon</u> - Flagstaff, Ariz., Paul Beaubien, Junior - Park Archeologist.	960.	
24. <u>White Sands</u> - Alamogordo, N. M., Tom Charles, Cu.- - - -	142,987.	
25. <u>Wupatki</u> - Flagstaff, Arizona, David J. Jones, Park Rang.	35,865.30	
26. <u>Yucca House</u> - Cortez, Colo., T.C. Miller, Aztec, N.M. in chg.	9.6	
Total Area (in acres) - - - -		724,659.96
(1132.2 square miles)		

CONDENSED REPORT

IN WHICH ARE GIVEN THE HIGHLIGHTS OF THE MONTH

Coolidge, Arizona,
November 1, 1937.

The Director,
National Park Service,
Washington, D. C.

Dear Mr. Director:

The Condensed Report for the month of October, 1937, follows:

<u>TRAVEL</u>	<u>Oct., 1937</u>	<u>Oct., 1936</u>	<u>Oct., 1935</u>	<u>Travel year, 1938, to date.</u>
Arches	80	---	---	80
Aztec Ruins	382	815	1,155	882
Bandelier	353	723	659	933
Canyon de Chelly	149	119	64	149
Cabulin Mountain	1,100	400	1,300	1,100
Casa Grande	2,482	2,190	2,381	2,482
Chaco Canyon	391	732	315	391
Chiricahua	727	690	---	727
El Morro	196	169	160	196
*Gila Cliff Dwelling	15	--	--	15
Gran Quivira	198	189	339	198
*Hovenweep	---	---	---	---
Montezuma Castle	734	499	368	734
*Natural Bridges	109	65	---	109
Navajo	70	---	---	70
*Organ Pipe Cactus	900	---	---	900
Pipe Spring	67	89	220	67
*Rainbow Bridge	56	---	---	56
*Saguaro	1,500	---	---	1,500
*Sunset Crater	1,000	287 (Reg.)	---	1,000
Tonto	250	217	332	250
Tumacacori	301	803	711	801
Walnut Canyon	841	733	687	841
White Sands	5,843	5,979	3,507	5,843
Zupatki	85	155	100	85
*Yucca House	50	---	---	50
TOTAL	20,459	---	---	20,459

*Estimated

October is a "between seasons" month, winter travel to the southern monuments not yet making much of a gain, and summer travel to the northern areas dropping off on the winter obb. All monuments show a drop from last month except Casa Grande and Navajo which record slight

CONDENSED REPORT (CONT.)

increases. In comparison with October, 1936, however, healthy gains were registered at all monuments except Chaco Canyon, Pipe Spring, Tumacacori, and Wupatki at each of which local conditions account for the drop. Total travel to all monuments is well in excess of last October.

000 GENERAL

010 Matters of Unusual Importance

Canyon de Chelly: A find of old tools, possibly cached by an Indian about 1868, offers interesting historical possibilities. (See p. 286)

Walnut Canyon: Proposed re-routing of U. S. Highway 66 and of the Santa Fe Railroad tracks may alter the approach route to the monument making it about four miles shorter. (See p. 302).

Natural Bridges: A party composed of state and government officials has gone over the proposed route to Capital Reef National Monument indicating the possibility of a road to that area. (See p. 298).

Montezuma Castle: Studies are being conducted to determine the feasibility of establishing a State Game Preserve adjoining the south and west sides of the monument. (See p. 280).

020 Weather

As usual, a great variety of weather conditions has been encountered throughout the Southwestern Monuments. However, normal autumn temperatures have prevailed. Casa Grande, Tumacacori, and Montezuma Castle have been hot and dry while wet weather is reported from Aztec, Pipe Spring, Navajo, El Morro, and Wupatki. Canyon de Chelly and Chaco Canyon suffered from heavy rains and floods, reported in the latter monument to be the worst in the experience of the custodian. (See p. 286). Chiricahua has recorded frosts in the higher country and wet weather in early October. The approach road to Navajo was badly washed out in a heavy rain of September 29 (See p. 282).

100 ADMINISTRATION

123 Visits by National Park Service Personnel

Headquarters: Director and Mrs. Cammerer, Jess Jennings, Frank Fish, M. V. Walker, Ben Thompson, Hub Chase, Bill Stevenson, Dorr Yeager.

Archae: O. C. Taylor, J. H. Diehl, J. Husburn, P. Franke.

Aztec: Lewis T. McKinney.

Bandelier: L. E. Bennett, C. E. Kruger, Dr. C. Gould, Theo. Cronyon, M. V. Walker, L. A. McClatchy, J. Stevenson, Dr. McDougall, O. S. Taylor, J. H. Diehl, C. E. Landon, M. McCole.

Casa Grande: Director and Mrs. Cammerer, Jess Jennings, Frank Fish, M. V. Walker, Chas. Richey, A. W. Burney, Dorr Yeager.

Canyon de Chelly: Doc. Gipe.

Chaco Canyon: T. C. Miller.

Chiricahua: Director and Mrs. Cammerer, Hugh Miller, Clinton Rose, and Luis Castellum.

Montezuma Castle: J. H. Tovres.

Navajo: Mr. DeLong of the San Francisco Office.

CONDENSED REPORT (CONT.)

Pipe Spring: Al. Keuhl.

Tumacacori: Director and Mrs. Cammerer, M. V. Walker, Hugh Miller, A. W. Burney, J. H. Tovrea, Lorr Leager, Dale King, Frank Pinkley, J. H. Haile, Clinton Rose, Luis Castellum.

White Sands: Director and Mrs. Cammerer, Hugh Miller, Hub Chase, Jack Diehl, Adrey Porell, Charles Richey, Tom Boles.

180 Publicity.

White Sands: As usual, this monument appears to be getting the lion's share of publicity in publications with an enviable range of distribution. (See p. 276).

200 MAINTENANCE, IMPROVEMENTS, AND NEW CONSTRUCTION.

210 Maintenance, Unusual

Montezuma Castle: Repairs have been started on the revetment wall.

220 Improvements

Aztec: A twenty-five gallon gasoline tank has been placed on the custodian's car.

Bandelier: Valves and fire hydrants have been installed in the Hotel Development area, and Unit 1 of the Hotel Development has been completed.

Casa Grande: A new grease rack is under construction.

230 New Construction

Canyon de Chelly: Materials have been obtained and work started on the new equipment shed. (See p. 286).

300 ACTIVITIES OF OTHER AGENCIES IN THE MONUMENTS

320 Cooperating Agencies

Chaco Canyon: The Soil Conservation Service is carrying on maintenance work with a small crew.

350 Donations and Accessions.

Headquarters Loan Library: An imposing number of books and other publications has been received during the month. (See p. 305).

Walnut Canyon: Several ethnological specimens have been added to the monument museum. (See P. 302).

El Morro: The skin of a rare Black-footed Ferret was prepared and sent to headquarters for safe keeping. (See P. 264).

Montezuma Castle: Museum specimens for the month consist of a large tarantula and a small rattlesnake. Several publications have been added to the monument library.

400 FLORA, FAUNA, AND NATURAL PHENOMENA

410 Ranger, Naturalist, and Guide Service.

Guide Service is impressing itself upon the personnel as a matter of great importance regarding which too little is known. The subject

CONDENSED REPORT (CONT.)

is discussed in detail under "Visitor Statistics", page 308a.

Saguaro: Boundary patrol to protect the Saguaro herd of deer is being maintained. (See p. 307).

420 Museum Service.

Museum Monuments: As museums and museum exhibits are gradually established in the monuments, the problem of how most effectively to render them serviceable to the public demands careful study. This subject is discussed on pages 308 c and e under the heading "Visitor Statistics".

460 Birds.

Headquarters: The autumn bird-banding program was commenced shortly after the middle of the month.

Walnut Canyon: Bird banding at Walnut started with a bang on October 24. The list of "takes" for the first half day is most imposing. (See p. 203)

470 Animals.

Bandelier: The injury to fish by the flood in Frijoles Creek was not as bad as believed at the time of the last report (See p. 271).

El Morro: A Black-footed Ferret was drowned on the monument and made up into a study skin. (See p. 264).

Montezuma Castle: Numerous interesting observations on the wild life of the monument have been made during the month. (See p. 279).

Tonto: Skunks as house guests are discussed on page 295.

480 Miscellaneous

Aztec: Some work on weed control has been carried on. (See p. 269).

500 USE OF MONUMENT FACILITIES BY THE PUBLIC

510 Increase or Decrease of Travel

The travel curve for October swung downward as expected in almost all of the Southwestern Monuments. However, the gain in attendance over the number of visitors to these areas in October, 1933, indicates an encouraging interest.

520 Conditions Affecting Travel

Although the fact that October is a "between seasons" month is undoubtedly responsible for the falling off of travel from September, several of the monuments have local conditions which alter the normal record.

Aztec: Rains throughout northwestern New Mexico are considered by the custodian as having a depressing effect upon travel.

Capulin Mountain: With approach highways under construction, only the most determined visitors get through. (See p. 297).

Chaco Canyon: Some loss of travel is blamed on bad roads. (Page 293)

Montezuma Castle: Rough, dusty roads discourage visitors. (Page 281)

Walnut Canyon: Some travel drop is laid to bad roads. (See p. 303)

CONDENSED REPORT (CONT.)

Wupatki: Evidence points to road construction as the factor that deters many visitors, or routes them another way. (See p. 296).

530 Newsworthy Visitors.

White Sands: This monument has its usual imposing list of interested and prominent visitors. (See p. 267).

600 PROTECTION

610 Police.

Saguaro: Cooperation of CCC Camp SP-11 and the support of local ranchers has been a most encouraging and helpful asset in the boundary patrol of the monument during deer season. (See p. 307).

650 Signs.

The State Tourist Bureau of New Mexico has placed a number of very attractive directional signs during the month, many of them at junctions with approach roads leading to national monuments. Favorable comment upon these markers has been made by the personnel at Aztec (see p. 267), Chaco Canyon (See p. 293) and El Morro (See p. 260).

Montezuma Castle: Two badly needed enameled road signs were installed during the month.

Walnut Canyon: Two directional markers were put up.

660 Sanitation.

Jasa Grande: The flood of middle September damaged the sewer pump making it necessary to send it to Phoenix for repairs.

Canyon de Chelly: Leaking man-hol covers and other sewer problems have been worrying the custodian.

700 ARCHEOLOGY, PREHISTORY, AND HISTORY

Aztec: With the slackening off of the tourist season, time is available for research which is now getting under way.

Walnut: Several specimens have been added to the museum exhibits.

900 MISCELLANEOUS

Arrival of replacements has brought the enrollment at various CCC Camps throughout the monuments up toward normal strength and stimulated activity on their various projects.

Chiricahua: One hundred twenty two enrollees arrived on Oct. 24.

Pipe Spring: Camp strength was augmented by 30 new enrollees on October 10 and an additional 75 on October 16.

Canyon de Chelly: A Navajo Fire Dance was held on October 22 and attracted a large crowd of spectators. (See p. 287).

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CONDENSED REPORT (CONT.)

900 MISCELLANEOUS (CONT.)

MAIL COUNT

Incoming:

Official	1,634
Personal	<u>960</u>

Total incoming	2,594
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Outgoing:

Official only	<u>2,781</u>
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Total outgoing	<u>2,781</u>
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TOTAL POSTAL MAIL	5,375
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Telegrams:

Incoming	41
Outgoing	<u>32</u>

Total telegrams	<u>73</u>
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GRAND TOTAL PIECES OF MAIL HANDLED	5,448
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Cordially,

Frank Pinkley,
Superintendent.

FIELD REPORTS

- FROM THE MEN ON THE JOB -

TUMACACORI

By James B. Felton,
park ranger.

TRAVEL:

As expected in October, Tumacacori visitor count dropped--to 801 people. Of these, 773 were given guide service. The other 28 either looked from the parking area or used the facilities. This month's number of visitors compared favorably with October of last year when a total of 808 people visited the monument.

GENERAL:

Custodian Caywood and Mrs. Caywood left the evening of October 18 for Berkeley, California. Mr. Caywood is going to put the final touches on our museum exhibits. In his absence, the ranger is trying to fill two jobs and finds this report one of the first items to be moved off the calendar.

We should be entitled to an "alibi" for our travel record. Due to construction activity around the monument entrance, many visitors failed to drive into the parking area. They seem to be satisfied with a long look from their cars while slowly driving by. In two more weeks the contractor will have everything cleaned up out in front of the new building, and with the opening of the winter travel season Tumacacori will again have a heavy flow of visitors.

The falling off of travel has given us an opportunity to catch up on the odd jobs. Now that the growing season has come to an end, we have cleaned the weeds from around the sides of the church and the cemetery. A wide area in front of the mission has been landscaped and by the removal of straggling tamarisk shrubs, the appearance of our small cactus garden has improved. Waste material from the new building has been dumped into the adobe hole. When this is leveled, the water will no longer run into this sink, thereby ending one of our small problems. From constant cleaning, the floor of church has been lowered. The low places thus formed have been filled and tamped.

PARK SERVICE VISITORS:

October 5. Superintendent Pinkley, Assistant Engineer Tovrea, and Assistant Park Naturalist Dale King.

TUMACACORI (CONT.)

October 7-9. Assistant Park Naturalist M. V. Walker and Mrs. Walker of Petrified Forest National Monument.

October 10. Director Cammerer, Mrs. Cammerer, Assistant Superintendent Miller, and Mrs. Miller.

October 11. Assistant Chief Engineer A. W. Burney of Washington, D. C., with Assistant Engineer Tovrea.

October 13. Mr. and Mrs. Dorr Yeager and Dale King. Mr. Yeager is assistant chief of the Western Museum Laboratories in Berkeley, California.

October 17. J. H. Haile, CCC inspector, and Clinton Rose, resident landscape architect.

October 19. Assistant Engineer Tovrea.

October 21. Luis A. Castellum, clerk-stenographer.

WEATHER:

After a rainy summer, Jupiter Pluvius has forgotten Southern Arizona. There have been two or three light showers in the nearby mountains, but no rains visited the monument. In spite of the dry month, range conditions are better than usual for the hills remain covered with summer grasses. Typical fall weather now prevails with warm days and cold nights making morning and evening fires appreciated. The first frost of the season is expected within the next two weeks.

SPECIAL VISITORS:

On October 8, Father Victor R. Stoner, Dr. Emil Haury, head of the Department of Anthropology, University of Arizona, Mr. Michael Wilder, curator of Taylor Museum, Colorado Springs, Colorado, Mrs. Wilder, and Dr. Ewing, professor of history, University of Arizona, spent some time with the custodian. The party went from Tumacacori to Guevavi. In the near future, Mr. Wilder expects to publish a comprehensive treatise on the architecture of the New Mexico and Arizona missions.

Mr. J. B. Heath, from KTAR in Phoenix, Arizona, and Mr. Lowell Jackson, of Chicago, Illinois, visited Tumacacori on October 15. They were very enthusiastic about the National Park Service programs recently broadcast over the NBC network.

HISTORIC AMERICAN BUILDING SURVEY:

Junior Architect Nichols and the ranger measured part of the mission church. This job has been turned over to Mr. Eastman and Mr. Maguire, CCC technicians. A complete report on this activity as well as the progress of the construction on the museum building is being prepared by Mr. Nichols for your office.

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TUMACACORI (CONT.)

Is there a tendency for our average guided party to increase in size, and if so, why? I note that the average party at Tumacacori this month is 4.6 whereas it was 3.7 a year ago. Are cars getting more roomy and more people riding in each car on the average? If there was a sharp increase in visitors, we could say the same men handling larger crowds would have to handle larger parties, but our total contacts at Tumacacori last year were 743 against 773 this year. The field trips fell, however, from 196 last year to 186 this year. With the fall in number of field trips, we got a rise in the trip time amounting to 3.3 minutes per trip. I wonder if it will ever be possible for us to figure from a certain visitor load and determine beforehand the ideal number of field and museum trips and the proper length of time for each to make the ideal trip for our visitor? And, just as soon as we can determine that, we will have to begin figuring the proper variation from the ideal trip to fit the different seasons. Have you ever noticed that the July run of visitors are different from the September run?

I note Jim's observation of the visitor who drives past slowly, taking a long look as he goes but not stopping his car. We plan to fool that man in a few years by planting a screen along the west wall which will force him to come in and see the mission properly instead of risking his own and all other motorists' necks by doing his sight seeing from a moving car on the paved highway. This planted screen will work both ways: once the visitor is through our administration building and walking toward the mission, it will allow his eye and mind to leave modern times and drop back a hundred or two hundred years to the mission period.--F. P.

*****O*****

TUMACACORI MUSEUM

By Frederick D. Nichols,
inspector.

WEEK ENDING SEPTEMBER 18:

On Monday, September 13, the bricklayers began on the office walls and had the lobby and office laid up and the workroom begun the following day.

On Wednesday, the beams having been set over Exhibit Rooms 1 and 2 and the Office, work was begun on placing the ocatillo savinos over the beams in the office. I did not like the effect as only one row of ocatillo was called for, and several rows were needed to fill up the cracks; so I had work on that stopped until I could discuss it with Mr. Tovrea who was coming the following day.

Thursday I drove to Tucson and discussed with Mr. Tovrea and Mr. Sundt the changes to be made. In the afternoon we inspected the job, and Mr. Tovrea agreed with me on the appearance of the ocatillo. As the time was limited, it was decided to chance to random sheathing for
SOUTHWESTERN MONUMENTS

TUMACACORI MUSEUM (CONT.)

the ceilings in the lobby and office and not attempt to procure canes. It was also decided to change to a white-top roof instead of the gravel roof called for. Mr. Sundt stated that white-top is by far the best type roof in this particular vicinity. This change will result in quite a saving also, and this is most welcome as we have no extra money for the museum.

By Friday, the last working day of the week, the walls had been completed around the work room and Kino Room and were begun on the View Room.

WEEK ENDING SEPTEMBER 25:

At the beginning of this week I had finished the drawings of the Leon Ranch in pencil and had them partly inked, working when I could spare time from the museum. I was able to borrow a drawing of the old mission of Guevavi as it was at that time, made in 1917 by Prent Duell, and started putting that on H.A.B.S. sheets. It is important to our records as I want to measure all the old mission structures in Arizona.

On Monday, the metal shutter in the View Room was set. I persuaded the foreman to set it in concrete to make it as strong as possible. The piers and arches were finished on the North Loggia and the piers on the South Loggia. The fireplace in the Lobby was completed and the beams were laid over the North Loggia. Random width sheathing was laid over the Lobby, Kino, and Office.

The following day the arches on the South Loggia were completed. Trenches were dug for the walls. Exhibit room No. 3 was ceiled.

On September 22, work was begun on the parapet walls. The walls of the View Room were finished and the Workroom ceiled. In the morning Mr. Claywood and I visited the old mission site of Calabasas and measured the existing building for the H.A.B.S. There was considerable evidence of the Franciscan Church, and it will be possible for me to do a reconstruction drawing of it.

WEEK ENDING OCTOBER 2:

On Monday, September 27, the roofing men arrived. I went over the roof and inspected the slope and found it satisfactory, so work was begun on the white-top. The roofs over the Lobby and Office had the carpentry work completed and were made ready for the roofing. All the underground plumbing was completed. It was tested by water before any pipes were covered and found to be satisfactory.

The following day the roofing over the Exhibit Rooms, the View Room, Workroom and South Loggia was completed. The galvanized-iron flashing was placed and the brick cornice was completed on the west side of the

building.

By Wednesday the brick cornice was finished on the Main Building, and the roofing over the Office and Lobby was completed. The white-top was very well put on and should prove very satisfactory as it has been highly recommended by building men in this part of the country. I completed the drawings of Calabasas this week, including a restoration plan of the church.

The following day the borders around the slabs in Exhibit Rooms 1 and 2 were poured. I had them poured first leaving an expansion joint around the floor proper, and a joint over the basement wall where the floor projects over the heater room. The brick cornice was chipped to provide a good bond with the plaster mould upon it.

On Friday the slab was poured in the Kino, Lobby and North Loggia, and the sills in the Exhibit Rooms were finished. The electrician arrived and began placing conduit.

WEEK ENDING OCTOBER 9:

The floor was poured and finished in the Exhibit Rooms, the Office, and the Workroom. I found it necessary to have the lathers go over their work and carefully tie the wires embedded in the adobe wall around the wire lath covering the exterior.

On Tuesday, October 5, I drove to Tucson to meet Eastmand and Maguire and find out when they would be available for H.A.B.S. work. I learned that they were finishing up their present work, but would be ready to help me in about ten days. So I decided to get in touch immediately with Inspector Haile and get his permission to release them for Historic American Buildings Survey work as soon as they were free of the work they were completing.

On Wednesday of this week, work was begun on the studding of Exhibit Rooms 1 and 2. All the patio walls were completed this week, and the brick coping covering them was placed.

On October 7, the cement floors in the Exhibit Rooms were marked off with a carborundum according to a drawing that I had prepared to take care of the expansion joints. The cast cement urns were placed over the main entrance and over the View Room.

On Friday the carpenters continued placing the studding in the Exhibit Rooms, the Mexican laborers were put to work on grounds clean-up, and getting ready for the plasterers on the 11th. The foreman and I checked over the dimensions of the studding carefully to make sure that the cases for the exhibits would be easily fitted.

TUMACACORI MUSEUM (CONT.)

WEEK ENDING OCTOBER 16:

On Monday, October 11, three plasterers and the plaster contractor arrived. He made samples of the interior and exterior plaster finishes and when Mr. Tovrea arrived he and I discussed them and selected the ones best suited to the effect we were trying to achieve. There had been some trouble getting lathers so not all of the wire lath had been applied.

On Tuesday evening the front wall, the North Loggia and walls and the Workroom walls on the north and south had been given their scratch coat. Work was begun on the heating and ventilating ducts.

On Wednesday, Mr. Yeager from the Museum Division in Berkeley, California arrived, and I was glad to see him as there were some troublesome questions that I wanted to ask him. I wanted to get the exact sizes of the cases from him to be sure the openings would fit, and also the sizes of the Kino statue before the niche for it was plastered. The electrician also wanted to know the size of the bulb to be used in the cases. Mr. Yeager was most helpful in clearing up these points.

On October 14, the main entrance doors were fitted. They had been received on Tuesday from Bandelier National Monument where they were made. They are very richly carved and studded and are beautifully made. The new door was cut in the comfort station, and the window was reset. The plumbing was moved to its new location.

By Friday evening the front wall and North Loggia had their scratch and second coats. The South Loggia and workroom and Comfort Station had their scratch coats.

This week I was able to spend some time measuring the mission building, and considerable work was accomplished due to the assistance of Custodian Caywood and Ranger Felton. We measured the South Facade, the North Facade, the West Facade, and the Belfry.

WEEK ENDING OCTOBER 23:

On Monday, work was continued on the wiring and on the lathing. Eight plasterers arrived and began work.

The following day work was begun on the cornice moulds. I had the edges of the arches on the loggias rounded off slightly to take away the hard edge. Mr. Tovrea and Mr. Sundt arrived to test and choose color samples. The Patio wall received its scratch coat of plaster.

On October 20, Ranger Felton and I worked on the forecourt wall. It had been lowered considerably leaving the wall to meet the columns

about half way up, which was not a pleasing proportion. So, as Mr. [redacted] had approved my suggestion to place an adobe console against the pier, and as we had no extra money for such changes, I decided to do the laying up of the adobe against the four piers with the help of Ranger Felton and one of the foreman's adobe layers. So, thanks to Ranger Felton's assistance, we got the consoles in place and I believe they improve considerably the appearance of the forecourt wall.

On Thursday, Eastmand and Maguire arrived to assist me in the Historic American Buildings Survey work, and I had them begin work measuring the east side of the mission. I had found it necessary to completely remeasure the building as previous measurements of it do not coincide. By this evening, all of the building had received its brown coat and all the patio walls and forecourt walls their scratch coat. All the moulded plaster cornices were completed, and the comfort station had its scratch coat and brick cornice.

On Friday, the forms were made for the shell design over the main entrance. The electrician had finished most of his wiring.

On Saturday, Mr. Tovrea and Mr. Sundt arrived with the painter and samples of the exterior color were made. It was decided to use a buff on the exterior walls with a darker buff base and a white cornice. The Loggias are to be a light cobalt blue with a white dado and ceiling.

We finished the plan of the Mission today, and have now completed the four elevations and one section.

*****O*****

CHIRICAHUA

By Frank L. Fish,
custodian

GENERAL

The visit of Director and Mrs. Carmerer, under the guidance of Hugh and Christine Miller, was probably the highlight of a busy month. As during the Director's first visit, the higher elevations were obscured in fog but he was able to get some idea of the attractions on a short horse back trip from the Administration Building to the Echo Canyon Parking Area and then by automobile through Bonite Canyon. It is hoped that he will be able to make a return trip and out-guess the weather.

WEATHER

We had rain on September 29 and October 11, 12, and 16. The storm of the 11th and 12th amounted to around 3 inches precipitation. Killing frost has occurred in the higher elevations of the Chiricahuas.

CHIRICAHUA (CONT.)

but at headquarters we have not had any as yet (October 24). The nights have been cool and days warm for the greater part of the month.

ROADS

Approach roads are in excellent condition with improvements progressing at about the usual speed on the Bisbee-Elfrida and Dos Cabezos sections under construction. The Forest Service has a bridge crew improving on the Rodeo, New Mexico, road.

The monument road is in fair condition, some sloughing of the banks in the sections that are to be backslowed occurred during the month. with the arrival of 122 new enrollees today, work will be resumed before long on these bad sections.

<u>VISITORS</u>	Contacts	Cars	Out of State	Trip Trips	Trip Attendance	Total Minutes, Guide Service
1937	727	184	169	70	399	2662
1936	<u>690</u>	<u>158</u>	<u>213</u>	<u>16</u>	<u>128</u>	<u>1725</u>
Gain-----	37	26		54	271	837
Loss -----			44*			

*Last year's greater number is accounted for by 60 out-of-state enrollees arriving in camp and going through in a guided party. The difference in counting educational contacts this year over last year accounts for the big gain in trips and attendance.

NATIONAL PARK SERVICE OFFICIALS

Director Cammerer and Hugh Miller visited us on October 11. Clinton Rose and Luis Gastelum came in on the 22nd.

OTHER GOVERNMENT AGENCIES

Fred Winn, Shoemaker, Jalkins and Kinneson, of the U. S. Forest Service on September 28; Gilbert Sykes, district ranger of the Forest Service, on September 30, October 7, 8, and 19; F. M. Guirey, state landscape architect, came in with Clinton Rose on the 21st. and 22nd.

NEIL ERICKSON

A great loss to the community occurred with the passing away of Neil Erickson at Lordsburg, New Mexico, on October 18. Mr. Erickson's body was brought back to his home at Faraway Ranch and buried at the mouth of Bonita Canyon where years ago he planted some cypress trees to mark his desired resting place. Mr. Erickson was a former Indian fighter and the first ranger on the Coronado National Forest. Hundreds of friends gathered to pay their respects to this lovable man and fine

CHIRICAHUA (CONT.)

neighbor on October 21.

*****O*****

We who knew him were saddened by the passing of Mr. Erickson. He was a fine man and liked by all who met him. It made a trip to old Fort Bowie intensely interesting to have him with us when we were there a couple of years ago. He had served there in the early and middle eighties and was full of the details of many of the Indian uprisings of those times. I remember how dramatic it was to me as he stood at a particular point in the parade grounds and told us how he was standing right there in '86 when the heliograph flashed a message down from the top of that peak to the southwest and he watched the operator receive and translate a report from a field party who were chasing a band of Indians over in the country to the southwest, where, by the way, a paved highway now runs. He was a most interesting partner on such a journey and that day will always stand out in my memory because of him.-F.P.

*****O*****

CHIRICAHUA CCC

By William Stevenson,
project superintendent.

Basement walls were finished this month and floor joists are in place in the Employee's Residence. Window frames for this building have been made up in the carpenter shop.

The sewer line extension from the headquarters main to Employee's Residence is complete.

The rear porch was completed on the Administration Building.

Work continued throughout the month on the rock quarry.

On October 11, six trucks were sent to Congress Junction, Arizona, to move portable buildings to Coolidge for use by the fly camp. The move was completed October 17.

An average of 20 men were available on the work projects during the month of October. One hundred twenty-two replacements are expected October 25.

*****O*****

EL MORRO

By Robert R. Budlong,
custodian.

This custodian returned from his vacation October 15, so this report is based mainly upon notes left by Jimmie Brewer prior to that date, this travel month being closed out a week after my return.

EL MORRO (CONT.)

VISITORS

A total of 196 persons visited this National Monument during the travel month of October, and of this number, 172 were contacted. There were 37 trips; total time spent, 2170 minutes; average time per trip, 58.6 minutes; average attendance per party, 4.6 persons.

During the month, Jimmie gave a campfire talk to a group of 21 Girl Scouts, conducting them over the trail the following day.

The register shows that on September 27, Ansel Adams, well-known photographer, and Georgia O'Keefe were visitors to the monument.

Messrs. Monroe and Watkins, National Forest Service, Albuquerque, visited here on the twenty ninth.

WEATHER

When I left the monument, in September, the fields were fairly green, farmers had some hopes of making a crop in spite of very little rain, and weather was warm. Upon my return I promptly ran into a heavy rain and found fields brown, plants killed by frost, and days chilly. Ice forms every night now and winter evidently is not far off. Farmers have gathered their bean crops but it develops that, due to the scattered and none-to-plentiful rains, some made good crops while others, living within as little as a mile distant, made practically nothing. This has been a freak season here and, due to insufficient general moisture during the summer, the coming winter is going to be a mighty hard one on the neighbors--some of whom, for their entire season's work, made less than \$50 gross income from their crops.

NATURE NOTES

In the files I find a notation by Jimmie Brewer from which the following is written:

On September 25, Jimmie observed a small mammal in the water pool. It seemed quite at home in the water and was at first thought to be a mink. It was observed again on the 26th. Apparently it had fallen into the pool and was unable to get out over the dam. On the 27th, Jimmie went to the pool to get a picture of it but it could not be found, so he crossed to the far side of the pool by wading and found the animal dead under a flat rock. A study skin was made, the specimen proving to be a rather rare Black-footed Ferret. The skin has been sent to Headquarters for storage there being no facilities for keeping it here at the present time.

ROADS

From Jimmie's notes, I observe that on October 5 an Indian Service

EL MORRO (CONT.)

truck, with a gross weight of 12,000 pounds, crossed the bridge we hurriedly constructed early this year.

A new directional sign was erected on Highway 66 at Grants by the State Highway Department. The sign is of carved wood, varnished, with colored letters, and is most attractive. Similar signs were observed along the highway in New Mexico, and the State has certainly done a good job on them. I think that they are the most attractive highway signs I have yet seen.

WATER

Oh, well, never mind.

TRANSPORTATION

Boss, we're mighty proud of our Chevrolet pick-up truck. It runs like a charm and looks like a brand-new one. I wish I could say the same for the contraption on wheels that Jimmie was driving. When the HCWP and I returned to the monument on the 18th, we saw Jimmie's truck parked halfway down the road the air blue with smoke smelling strongly of sulphur. Apparently something was wrong. Upon getting within half a mile, we were led to understand from language Jimmie was using that something was most decidedly wrong. After exchanging greetings, we observed that the truck wouldn't run; the battery case was cracked and water leaked out faster than it could be put in; there was no charge in the battery. The recalcitrant critter was promptly taken in tow and an attempt was made to get it started. After pulling it all over this part of the country in a drizzling rain without a single cylinder firing, we towed it to Ramah in a pouring rain, over and through roads that were by that time seas of mud. Extra parts were ordered from Gallup, and brought out the following day by the mailman. I was greatly surprised, upon lifting the hood, to discover that there was an engine under it. But even the mechanic couldn't make it run so we started to tow it to Gallup. When we were within ten miles of Gallup, the tie-rod broke and one wheel locked when a brake cable went out, so we pushed the truck to one side of the road and drove to Gallup for assistance. The following day the truck was ready to run (for a while, at least) and Jimmie started for Headquarters. We surely hope he got there. I believe most of the way is downhill, so perhaps he made it.

VACATION

The Custodian took his first annual leave in four years, from the middle of September until October 15. He rather needed that vacation. In a way, as the Boss said, it was a sort of postman's holiday since I visited a number of National Parks during the vacation. My trips through the parks invariably were pleasant, but I do wish to take

EL MORRO NATIONAL MONUMENT (CONT.)

this opportunity to express my great appreciation for the kindnesses shown me by several officials.

In particular I wish to mention District Ranger Jack C. Moomaw of Rocky Mountain National Park. Apparently that man never rests; certainly he works at his job at any and all hours and is devoted to the Service. He and his charming wife and daughter made my stay in Rocky Mountain the highlight of my entire trip.

My trip into the Grand Tetons was made most enjoyable by the suggestions and assistance of Superintendent Whitcraft.

Bryce Canyon was also visited in a pouring rain which threatened to spoil things, but the hospitality of Ranger Cope and the interesting conversation of Ranger Naturalist Christiansen during the drive through the Park, turned the trip into a most successful and enjoyable one.

GENERAL

And so we return to the monument, having greatly benefited from a real vacation, and we are ready to enter upon official duties with renewed interest. Our great thanks to Jimmie and Sallie who kept things going in fine style. We wish they had not left so soon. Cold weather is rapidly approaching, and before long the snows will arrive. The rock was a mighty welcome sight to behold as we approached it at the end of our vacation, and we both join in the sentiment that "It's mighty good to be back again".

*****O*****

We are glad to hear, Bud, that the vacation was a success and hope the extra pounds gained will stay with you through the winter. May the time soon come when we can see that every employee takes his annual leave and comes back to the job freshened up. That time, however, is not going to come this year or next for financial reasons.

Speaking of that water supply of yours, which water Jimmie says isn't fit to run under a good bridge, one of these boys here in the office suggests that you sort our desert frogs out of that puddle and start them home. He says he isn't so afraid they will drown, now that the puddle is so low, but it is getting too cold for them up there in that high country.

I am glad you mentioned Jack Moomaw, and we are going to send him a copy of this report. I've known Jack for years through the local paper up there and kept track of his fine work.

'Gene says next time you and Jimmie have troubles with 8113 and

EL MORRO (CONT.)

find the timer points burned, remember you are not going to kill your trouble until you get a good battery on the line. Timer points just won't stand the gaff when the battery goes out.--F. P.

*****O*****

AZTEC RUINS

By T. C. Miller,
custodian.

GENERAL

/New

Heavy rains have prevailed in northwestern Mexico during the month. While such rains as we have experienced this month have slowed up travel to some extent, we have had a fair month in the way of travel nevertheless. Highway U. S. 550 from Aztec to Farmington is now being graveled and is quite rough and slow. The other roads in this vicinity have remained in good shape all the month except State Road 55 from Aztec to Bernalillo. Two bridges were washed out because of heavy rains. Detours were soon provided and the wash-outs did not stop the travel for long.

A new sign was erected on our entrance road at U. S. 550 on October 13. This sign was put up by the State Highway Department. It is a good looking job and we are very proud of it. This is one of the thirty State Markers financed by the State Tourist Bureau. It reads as follows:

Aztec Ruins National Monument 7/10 Miles.
Magnificent ruins of communal dwelling.
Represents the Zenith of Pueblo civilization.
Of the 500 original rooms, 24 are still preserved.
Known dates extend from 110 to 1121 A. D.
Conducted Tour.

MONUMENT INSPECTIONS

Two trips were made to Chaco under date of September 25 and October 16. Much is being accomplished on ruins repair there with the Mobile Unit.

Hovenweep and Yucca House were inspected October 18. The trip to Hovenweep was made by way of Ackmen on the north and the return trip by the way of McElmo Canyon. The sheepmen have not moved their sheep to their winter range near Hovenweep. Winter seems to be a little later than usual in that vicinity this year as there has been no killing frost recorded in McElmo Canyon this fall. From the look of the number of tracks around one of the groups of ruins, a few visitors are still coming in. I learned at the trading post in McElmo Canyon that several cars had stopped there during the month to

AZTEC (CONT.)

inquire about the road to the ruins. At Yucca House I was told that several parties were in to see the ruins during the month.

NEW EQUIPMENT

A 25 gallon gasoline tank was installed in the government car during the month. With this additional supply of gasoline, inspection trips can be made to these monuments and return without a refill.

TRAVEL STATISTICS AND VISITOR CONTACTS

Travel figures for the current month follow:

Total travel	882
Total contacts	1,478
Number of parties	256 (individual cars)
Number of field trips	154
Number of museum trips	162
Average time--field	27.9 minutes
Average time--museum	18.3 minutes
Increase over October, 1936	67
Decrease from September, 1937	924

The large decrease from last month is entirely expected and normal with the end of the travel season. The increase over last year is slight.

The difference between the total travel and total contacts arises largely from counting cars which drive into the parking area, around the center island, and out again without stopping.

WEATHER STATISTICS:

Maximum temperature	84° (Sept. 28)
Minimum temperature	26° (Oct. 20)
Clear days	17
Partly cloudy days	9
Cloudy days	4
Total precipitation	2.11 inches
Max. precipitation in 24 hours	1.12 inches (Sept.30)
Mean maximum temperature	71.5°
Mean minimum temperature	37.9°

NATIONAL PARK SERVICE VISITORS

Lewis McKinney just can't keep away from a good monument, but then we don't blame him for wanting to get into civilization three or four times a month.

SPECIAL VISITORS

Frank Humiston and his mother, of Spruce Tree Lodge, Mesa Verde, paid us their first visit on October 3.

On October 19, Earl H. Morris and his family stopped in to see what progress has been made. Mrs. Morris felt sure that the rooms of their former home (now part of our administration and museum building) had shrunk considerably. Mr. Morris helped us clear up a number of points about the ruins which had been puzzling us.

Miss Anna O. Shepard and her father were here twice, on October 7 and again on the 16th. Miss Shepard spent most of the 16th studying our pottery for comparative purposes.

U. S. Senator Dennis Chavez (New Mexico) went through the ruins and museum on October 11, and was followed the next day by his brother, Judge David Chavez.

On October 7, Mrs. R. H. Lovald (Aztec's former "rangeress", Gay Rogers) and Mrs. John Provinse were visitors. Gay just had to come back to the roofed kiva where she first met Dick.

Colonel Lowe, District CCC Superintendent, brought his family to see the ruins on October 20.

RANGER-ARCHEOLOGIST ACTIVITIES

With fewer trips to make through the ruins, Pete has been able to begin a research program for Aztec. This program has as its object the gathering of all data concerning the ruins and related problems. It is hoped eventually to compile a complete record of all references to the site in literature. Various other problems are being considered at the same time, especially that of kivas and their development. It is felt that since we have the only reconstructed kiva in the Southwest and such a large number of small clan kivas, this is the most logical place to feature the complete kiva story.

Another activity, overlooked in last month's report, is the column which Pete has been running in the Aztec paper: "Rumblings from the Aztec Ruins National Monument". The weekly stories discuss various phases of culture as it existed here and attempt to answer some of the more common questions asked by our visitors. In addition, special visitors and changes in exhibits are reported in the "Rumblings".

Fairly constant warfare has been waged against the hordes of insurgent weeds which made serious encroachments on our territory during the busy summer season. The loyalists now appear to have the upper hand.

AZTEC (CONT.)

We are very sorry, Carroll, that we had to change some of the figures in your report which wouldn't check up against SWM 16 which you sent along. The net result is that we had to eliminate that paragraph wherein you proved that the recent changes in your museum had given you a total net loss of 2.2 minutes per trip. As it stands now, you seem to have had an average of 27.9 minutes on field trips and 18.3 on museum trips in October, a total of 46.1 minutes in total. Last year, when part of your museum was included in the field trip, you ran 29.5 minutes on the field trip and 15.5 on the museum trip, a total of 45.0 minutes, so Charlie and Dale can claim 1.1 minute gain on you by the renovation of the museum. However, as umpire in this fight, I am not going to render any decision until we have at least a three month total on both Casa Grande and Aztec to compare with last year's figures and then we will analyze them and see what we shall see. We do note that last month you and Pete averaged 34.7 minutes on the field trip as against 27.9 this month. That is a 6.8 minute drop in the field trip and there is only a .3 minute drop in the museum trip. That puzzles me a little because there were 107 less field trips, 929 less persons, and 1.6 less persons per party. If the number of parties, size of party, and total of visitors all fall, one might expect the trip time to rise because the ranger would have more time to give to each trip. Generally speaking, I would expect trip time to fall as numbers of visitors rise because our men would have to cut the time to serve more parties, but here we have the opposite of that.--F. P. Am I in a fight without knowing it? Doggone!--D. S. K.

*****O*****

BANDELIER

By C. G. Harkins,
custodian.

TRAVEL

Our total travel for this month numbered 933 people arriving in 223 cars; small compared with last month's figures. However, we are ahead of the travel for October, 1936, by 205.

The six highest states by visitor count are as follows: New Mexico, 510; Oklahoma, 93; Colorado, 63; California, 52; Texas, 31; Illinois, 30. Twenty-nine states, three foreign countries, and Washington, D. C., had representatives among our visitors. The three foreign countries represented were Australia, South Africa, and India.

Two hundred thirty three people made forty five field trips averaging 5.17 people to the party and spending an average of 72.8 minutes to the trip.

Two hundred twelve of these were shown through the museum, making 52 trips averaging 4.07 to the party and consuming 15.57 minutes to the group. We are acquiring the knack of holding our visitors'

BANDELIER (CONT.)

attention a little longer in the museum and with a few more cases on display, our museum time will show a decided increase.

WEATHER AND ROADS

Days clear- - - - -	-21
Days cloudy - - - - -	8
Days partly cloudy- - - - -	2
Maximum - - - - -	-86°
Minimum - - - - -	-32°
Mean Maximum- - - - -	-69.74
Mean Minimum- - - - -	-37.93
Mean- - - - -	-53.83
Range - - - - -	-29.41
Precipitation - - - - -	1.78

The roads were quite dusty the fore part of the month but several good showers around the fifteenth enabled us to put them in good condition for fall traffic. At the present writing they are very good from the Detached Section to Headquarters.

New Mexico is now producing its regular trend in fluctuating weather conditions, but so far we have escaped having snow, although snow has fallen at Santa Fe, and the Sangre de Cristo Mountains have a mantle of white that no doubt will remain until next spring.

GENERAL

The flood of September 8 was at first thought to have washed nearly all our fish out of Frijoles Creek but, on further investigation, they were found to have survived to some extent, at least, the upper end of the canyon is well stocked but fish are scarce in the lower part. There formerly were quite a number of pools along the stream, but they were washed out or entirely filled up. If the cold weather this winter freezes the creek it is not likely the fish will survive. If more dams and pools were formed in the creek, fishing would be good in the future.

Travel has dropped off very sharply the last month, although the visitors we do have are very interested in our ruins.

The campground continues to be busy each Sunday with picnic parties. A great many visitors are making the circle drive over the Jemez Mountains and return either by Jemez Springs or Cochiti to Santa Fe and Albuquerque and, as a rule, they stop at Bandelier and use our campground. Two more direction signs have been placed on the road from the Valle Grande as several cars have missed the turnoff and continued on to Santa Fe without getting to see the monument.

BANDELIER (CONT.)

SPECIAL VISITORS

September 24. Irvin Vorus Todd, Major, U. S. Army, Finance Department, Fort Sill, Oklahoma.

September 25. Erle L. Hardy, meteorologist, Albuquerque Weather Bureau and Mr. Bernard, chief of Flood Control Division, Washington, D. C.

October 2. Mrs. Andrew F. Derr, of New York City, and daughter, Elizabeth, personal friends of H. M. Albright, former Director of the National Park Service.

October 8. J. M. Granger, U. S. Forest Service, Washington, D. C., F. C. Pooler, U. S. Forest Service, Albuquerque, New Mexico, M. M. Chenny, U. S. Forest Service, Albuquerque, New Mexico, and Frank E. Andrews, forest supervisor, Santa Fe, New Mexico.

October 21. Miss Joy Yeck, secretary to R. Vernon Hunter, director, Federal Arts Project, Santa Fe, New Mexico. Mr. Phipps, assistant educational advisor, CCC, Eighth Corps Area.

NATIONAL PARK SERVICE VISITORS

September 26. Lyle E. Bennett, assistant landscape architect, Santa Fe, New Mexico; C. E. Kruger, assistant landscape architect, Santa Fe, New Mexico.

October 10. Dr. Charles N. Gould, regional geologist, Santa Fe, New Mexico; Theodore Cronyon, assistant engineer, Santa Fe, New Mexico; Mr. and Mrs. Merle Walker and Margie Walker. Mr. Walker is assistant park naturalist at the Petrified Forest National Monument.

October 4. Mr. and Mrs. Leo A. McClatchy, Santa Fe, New Mexico; Mr. and Mrs. James Stevenson, Washington, D. C.; Dr. W. B. McDougall, wild life technician, Santa Fe, New Mexico.

October 6. Chief Engineer, and Mrs. Oliver G. Taylor, Washington, D. C.; John H. Diehl, regional engineer, and Mrs. Diehl, Santa Fe, New Mexico.

October 25. Mr. and Mrs. C. E. London, Santa Fe, New Mexico; Ruby Welsh, Durette O'Neill, Agness C. Peters, and Mr. and Mrs. Milton J. McCollm, all of the Santa Fe Regional Office.

*****O*****

I am glad to see that museum time come up from 13 minutes last month to 15.37 this month, Cy, and I believe with you that when we get the installation a little more complete and get the boys a little more acquainted with the museum talk, we will push up the museum time to about 20 minutes. I note that your field parties are a little larger this year than last, 5.17 as against 4.0 persons last year.

It might be well to put into the record here the result of some correspondence with Cy during the month whereby it was decided that he gets no temporary rangers at all during the remainder of this fiscal

BANDELIER (CONT.)

year and will have to make out with CCC boys when his traffic strikes him next spring. This is caused of course by the impoundment of part of our appropriation and, while we are planning to do our best with the material we can get, we are afraid we are going to have to show a downward curve in the quality of service we will be able to put out at Bandelier next April, May and June.

One thing which worries me about the Bandelier visitor figures is the low percentage of contacts. It amounts this month to less than 50% out of a possible 200%. Is it that visitors actually refuse guidance, and if so, why?--F. P.

*****O*****

BANDELIER CCC

By H. B. Chase,
project superintendent.

The Ruins Stabilization crew completed necessary repairs and stabilization of the Sun House this month. From this project, the crew moved to the kiva in Ceremonial Cave and at the present time stabilization work of walls and roof repair is in progress.

Excavation for the 20,000 gallon water reservoir in connection with the Hotel Development has been completed, the floor poured, all reinforcing steel cut and bent, and the outside forms for the walls are now in place. There remains approximately two weeks of form and steel work to be completed before the structure is entirely poured.

A large crew is in the rock quarry quarrying and shaping building stones for the Lobby and Dormitory units. This work has been in progress all month.

The excavation for the Employees' Dormitory, part of the Hotel Development, is now complete and all footings constructed and in place.

Unit No. 2, Lobby of the Hotel Development, one of the two large units in this development, was started during this month. Excavation is now complete for the building proper and adjoining patios of the building layout.

Footing excavation is now in progress.

During the past month, valves and fire hydrants for installation in connection with the Hotel Development arrived and were installed.

Unit No. 1 of the Hotel Development is now completed in all details. All phases of construction were reported complete last month. During the past month, all decorating and painting was completed by

one of the supervisory personnel, James Fulton.

In connection with the form work performed by the carpenter crew, this crew has further worked upon five hand-carved chairs reported in the process of construction some three months ago. In addition, they completed the Tumacacori Museum doors and shipped them to Tumacacori the first of the month. Under the furniture project, this crew has completed all cut-out work and assembled a portion of the lunch counter and stools which are to be installed in the Hotel Dining Room unit.

Preliminary work, setting of flags and locating of corners preparatory to starting the telephone line survey, was started during the month. It is planned that this crew will start the survey proper within the next few days.

I was called to the Headquarters Office during the last few days of September to aid in preparing the Tenth Period program for this camp. Besides the discussion of many of our problems and activities with the Headquarters personnel and the working out of a seemingly satisfactory program, the contact with the Boss and his gang around Headquarters was very enjoyable.

*****O*****

WHITE SANDS

By Tom Charles,
custodian.

This has been a wonderful month for the Great White Sands. If we hadn't had anything but the visit from Director and Mrs. Cammerer, it would have qualified under that description. For the Director had never seen the Sands and you know that we have never been able to describe them by words or by pictures or by the combination of words and pictures. There is only one way to get the story of White Sands and that is to see them. And the policy of administration must be determined by actual contact, by the feel that you get while here, for there can be no precedent in a place where there is nothing like it.

So it was really a wonderful thing for the Sands to have the Director come and "get the feel", to see the extent of the rippled hills, to experience the glare of the reflected sun, to get the picture of Federal Highway No. 70, and that beautiful headquarters by the side of the road. It is wonderful for us to know that both the Director and Mrs. Cammerer liked the Sands and were not disappointed.

The Director's visit was only one of a score of nice little pleasantries this month. It was nice to have Hugh Miller and Hub Chase and Ruby, Jack Diehl, Adrey Borell, and Chuck Richey, the boys who have been fighting it out with us from the beginning, and to have them share with us the delight of the new paving and to see them gaze

in admiration of the new buildings. Then it has been especially nice to see Johnnie Steven's work move ahead and take its stride for the finishing stretch. If you were here, Boss, you would take the same pride I take. It is kind o' like watching the children step out into the world and prosper. And you know it isn't the big things, it is the little things that make life worth while.

In the past week "Bill" and I have talked of the various thrills we have had since we took up this White Sands fad. She still insists that her biggest thrill was when you sent the first pair of Park Service license plates. That was in the days of \$1.00 a year (less the tax) and we furnished our own car and our own gas. Progress was slow and those government licenses were the first mark of recognition. Soon after we got those plates, we made a trip up to the old home in Kansas and I have always accused her of working up the \$257 trip to show off the \$10 Park Service license plates. I do not believe that you would have such a willing bunch of workers in the Southwestern Monuments if it was not for the thrills, the love of the work. I confess to you that my salary this month does not compare to the satisfaction which I had the day that the 100-piece band, in uniform, paraded in front of the new headquarters and the 1,200 people gathered to see the new road.

That brings us to the Band Parents' Picnic which was held at White Sands on Sunday, October 17. Alamogordo High School has a 100-piece band in yellow-and-white uniforms with black plumes, all spick and span. Of course, it was natural for them to want to have their annual picnic at White Sands, but you know there are scores of other places they could have had it and where they would have had it a few years ago. So it was nice that they had their picture taken in front of our main building, parked 200 cars in and around our new parking area and it was an inspiring sight to see those 200 cars with at least 1,200 people winding their way around the curves of the new road and have them gather in one of the big crystal bowls for the concert and the picnic lunch. The camp fire and the special music and the full moon was no small part of the program.

It was a local picnic to be sure, but there were dozens of cars from El Paso and Las Cruces and other distant points and then I suppose that you get the same pleasure from having the local people that I get. The distant visitor likes the Sands on its merits but the local people like it according to the reception and the treatment that they get. So I tell Ben that local friendship is the test of proper administration.

We counted 152 cars from 11 a. m. to 2:30 p. m. last Sunday, and figure that there were 200 cars at the party at one time and probably 250 cars for the day. Counting school busses, trucks, carryalls and over-crowded cars, we feel that the estimate of 1200 to 1400 people is not too high. Two evenings before this picnic, the senior class of

WHITE SANDS (CONT.)

the High School had their Senior Picnic at the picnic ground with 60 seniors present. So you see that things have been going our way this month.

To cap it all, Tuffy Autumn has arrived with his usual gusto. He is a very welcome visitor. He has started throwing the sand back into the face of the southwest wind and raising high and rippled ridges, he playfully snatches the worn-out plumes from the caps of the yucca and on one of his evening frolics he painted the leaves of the cottonwoods a dirty brown and then tipped their points with crimson and gold. He strolls along our yellow primrose paths with nonchalance as the charming asters ogle him from behind the nearest hills and the blushing four-o'clocks climb the dunes bedecked in all their gorgeous colors. Silly things, how soon their throbbing hearts will shrink beneath his icy hand and the truck foreman will howl for anti-freeze.

Please note the list of visitors this month: Director and Mrs. Cammerer; C. M. Cranger, assistant to Chief Forester Sylcox, U. S. Forest Service; Hugh Miller; Jack Diehl; Chuck Richey; Adrey Borell; O. F. Arthur, superintendent of Cibola National Forest; Col. Tom Boles, Mrs. Boles, and two of Mr. Boles' sisters from Arkansas; Hub Chase and wife; L. V. Compton, wildlife technician for the Soil Conservation Service; John H. Toulouse, Jr., from the New Mexico State Museum; Lyle Bennett; Chuck Kruger; and Mr. and Mrs. Hamilton. In addition to these official and semi-official visitors, we have had judges, senators, doctors, bankers, and many other distinguished guests.

In publicity, H. S. Hunter, editor of the El Paso Times, gave us a full column, top of page, descriptive of the new headquarters area. We had a White Sands picture in the Houston Chronicle, another in the New York Tribune and a spread over half the front page of the October 17, Sunday New York Times, by Isabelle F. Story, giving pictures of White Sands, Death Valley, and Bryce Canyon. This article was captioned "Oases for Tourists". The Chamber of Commerce here announced this week that they have sent 238 samples of our white sand to inquiring friends in the past year. That did not include the larger shipments of one pound to 500 pounds which have been sent to merchants, picture shows, and other institutions for show windows and publicity purposes.

Our registration for the month was 958, which is a drop from last month. On the basis of 14% registration, this gives us 6843 for the month. This is figured on the Mohun percentage and gives us no credit for the Senior Picnic of 60, or the 1,200 that we had at the band concert on the seventeenth. These and most of the night parties are composed mostly of local people and they do not register. Our registration included representatives from 33 states and 2 foreign countries.

We are having lovely weather, work is progressing nicely. Most

WHITE SANDS (CONT.)

of the outside plastering on the buildings is finished, many of the floors are laid and inside plastering is going on.

*****O*****

Along with this monthly report, Tom sent us a couple of pictures: one of the big day at the sands, and the other of his new administration building. Of course, Chief, you have been there recently and seen the new building and know how fine it looks. We hope to get Jim and Margaret Felton over there by the middle of November and we are anxious to get Jim's first reports on his direct day-by-day studies information. I think that is the one spot in our district where we can get the greatest results with the expenditure of the least amount of men and money and that we can make a big showing there in the next year.

According to Tom's estimates, the travel is a little heavier than last year; he reported 5378 persons last October and 6843 this year.--F.P.

*****O*****

GRAN QUIVIRA

Mr. Bounday is on annual leave this month and we have no narrative report from him but his substitute who is pinch hittin for him kept the visitor records and we learn that this October shows 53 field trips against 50 last; that we had 198 persons this year against 159 last; the average trip was 58 minutes this year against 56.7 minutes last year.

It would appear that it was about a normal month at Gran Quivira or slightly better than normal.--F. P.

*****O*****

MONTEZUMA CASTLE

By Earl Jackson,
custodian.

STATISTICAL:

Visitors-	- - - - -	-734
Arizona visitors by cars-	- - - - -	-409 (55.72%)
California visitors by cars	- - - - -	-185
New York visitors by cars	- - - - -	- 11
Total states (incl. Washington, D. C. and Hawaii)		32
Foreign countries (France, Germany, Argentina)-	- -	3
Conveyance		
Cars-	- - - - -	-218
Arizona cars-	- - - - -	-106
On foot	- - - - -	5
Horseback	- - - - -	2

MONTEZUMA CASTLE (CONT.)

Contacts

Trips - - - - -	-162
Attendance- - - - -	-500
Those who climbed ladders - - - - -	-382 (51.9%)
Average trip time - - - - -	40.95 minutes
Museum lectures - - - - -	-124
Attendance- - - - -	-365
Average museum time - - - - -	15.3 minutes

WEATHER AND ROADS

Weather continues quite dry. Total precipitation was .33 inches. Two days were cloudy and four partly cloudy. Rain fell on September 29 and 30.

Approach roads to the valley are in good condition, with the exception of a few miles of the Lakes Road which is a bit corrugated and rough. The dirt roads in the valley are uniformly in poor condition being quite corrugated and very dusty.

SPECIAL VISITORS

Park Service:

October 15, J. H. Tovrea, assistant engineer, was in on inspection and to fire the starting gun on the revetment repair job.

Other Visitors:

September 24. C. M. Gunther and F. M. Humphrey. They are respectively, Manager of the Harvey House at Williams, and General Auditor of Harvey Houses from the Kansas City Office.

September 26, T. R. Lawhorn, U. S. game management agent for this state.

October 2, Frank J. McAdams, Jr., assistant U. S. attorney, from Chicago, Illinois.

October 5, Edwin T. Stewart, engineer in the State Water Department, was in to check over a problem in connection with our water rights.

October 6, E. W. Filter, assistant to Dr. Charles A. Abbot, secretary of Smithsonian Institution, was an interested visitor. George Wrench, chairman, Arizona Fish and Game Commission, was in to discuss feasibility of a game refuge to adjoin the monument.

October 16, E. B. Bayles of Gila Pueblo and Grenville Goodwin, student of the Apache Indians, were in for a three day stay in the valley making this monument their base of operations for a search of old Apache camp sites. Needless to say, their visit was very much enjoyed.

October 18, F. M. Wilson, consul general to Australia was an interested visitor.

IMPROVEMENTS

MONTEZUMA CASTLE (CONT.)

Two new enameled road signs were posted to replace old ones which were damaged beyond the point of legibility.

A much needed general clean-up of grounds has been made by Ranger Jennings.

An insect mounting case was made by the custodian.

CONSTRUCTION

On October 18, repair of a badly damaged section of the revetment wall at the lower end of the castle grounds was begun. This work is progressing nicely.

NATURE NOTES

On September 24 late in the evening, a sizable porcupine was seen up a sycamore tree within 30 feet of the Jennings' tent house. We are mystified as to his reason for climbing a sycamore (Platanus Wrightii), for could see no evidence that any bark had been eaten. The porky was checked as closely as possible for identification without actually capturing it, and appears to be the Arizona Porcupine (Erethizon opixanthum (Coues) Mearns).

On the twenty sixth within a hundred years of the custodian's residence, a party of tourists ran over a 51 inch West rn Diamond Back Rattlesnake. The snake was so badly mangled we could not make a specimen of it.

On October 12, a very small Black-tailed Rattlesnake (Crotalus molossus) was found in front of the museum. We made a specimen of this one.

For our miniature case containing exhibits of our more spectacular insects, centipedes, etc., a magnificent tarantula was recently dug out of winter quarters and put in the lethal gas chamber of a fruit jar containing carbon tetrachloride. As soon as death had occurred, but before possible onset of rigor mortis, a median saggital section down the ventral aspect of the abdomen was made and an evisceration performed. Arsenic-powdered cotton was then stuffed in the abdomen and the opening closed. The specimen looks nice, but can't go on exhibit until its legs get dry enough to hold the body weight without buckling. This tarantula, in normal standing posture, measures $2\frac{1}{2}$ x $2\frac{3}{4}$ inches.

On October 13, we renewed what we believed was an old acquaintance, grown larger through the summer. It was a huge bull snake, (Pituophis sayi) and if it is one which we think we saw early in the summer, it has grown considerably. It was spied crossing the road toward the

MONTEZUMA CASTLE (CONT.)

custodian's residence. Then it crawled over against the wall of the house and up over the doorstep. The door was closed, so it went across the doorstep and around the corner of the house. As this doorstep is an even six feet long, it served as a good measuring stick. In its normal crawling position, the snake extended from one end to the other with at least three inches hanging over one end. That makes the biggest bull snake I have ever seen here, at least six feet five inches long.

As a result of the visit of George Wrench, chairman of the Arizona Fish and Game Commission, we learn of the interesting possibility that a state game reserve may be created to adjoin our boundary on the south and west sides. I think their main desire is to establish a refuge so that pheasants may be introduced and protected long enough to get established. While, as an employee of the Park Service, I am not interested in the introduction of exotic forms of life, I am interested in getting a larger protected area for our Gambel quail.

For Bird Notes for October, see Betty Jackson's report in the Supplement.

GENERAL:

Trip time has increased encouragingly this month over last, but museum lecture time has again gone down. This seems rather peculiar to me. One would think increased trip time would reflect greater visitor interest and, in turn, would give greater museum time. One might inject the personality element and say the guide was not as interested in putting the museum over as the Castle, but it is rather difficult to picture a guide cutting down his museum lecture quality as visitors become more interested.

I am more inclined to think the loss in museum time is due to the shortening of the days and the fact that we are between seasons. People at this time of year are about as interested as summer visitors, but are not as numerous, so trips can be more leisurely. Trip time thus increases with personality element left out for purposes of establishing a visitor norm. At the same time, the days are growing shorter. People will take time to see the Castle but consider the museum only as sort of a sideline, and when they finish the Castle they are in such a hurry to get to Jerome or Prescott or Flagstaff that they may pass up the museum entirely, or simply glance in it.

The statement was made that we are between seasons. We have finished our summer season and the winter season has not begun. True winter season means to me the influx of people who have money and time to travel leisurely. As they start coming in, they will take all the time necessary to see everything, no matter how short the day is or how late it is.

MONTEZUMA CASTLE (CONT.)

Increasingly bad roads delay the approach of visitors on these short days with the result that they have less time to spend here than they thought they would. Or maybe I'm all wet. Maybe I simply don't know how to put over a museum.

Let me make, on closing, foolish suggestion number 999,999: Why doesn't the Park Service specify that all its uniform hats be treated with some sort of weather proofing material so that hat brims won't curl up like autumn leaves every time they get a little wet?

*****O*****

The museum time for October a year ago was 17.7 minutes; for this month, 15.3, a matter of 2.4 minutes lower. I wonder if this was because the parties were smaller this year, 2.9 persons against 4.0 persons last year. Or do you think that, on the average, small parties move faster than large ones?

The field trip averaged 40.95 minutes this year against 36.9 last, a gain of 4.0 minutes. A 2.4 loss in the museum and a 4.0 minute gain in the field trip is a puzzler all right and you will note that I am taking last October against this October, thus eliminating the theory given above which compares September against October.

The most interesting thing about this visitor business is how little we know about them.--F. P.

*****O*****

NAVAJO

By Milton Wetherill,
park ranger.

October has been an ideal month although many of the days have been cloudy or partly cloudy. Nearly all the deciduous trees have changed color. The Water Birch leaves are nearly all off and the Aspen leaves are beginning to fall, but their color, which is lemon yellow, adds a brightness to the head of Bo-ta-ta-kin Canyon and the first side canyon below (Ta Beko).

Travel to the monument has been good. Among the visitors that came in were Ansel Hall, Mesa Verde, and De Long of the San Francisco office. Miss E. Derr, of New York, and driver were in October 16. After accompanying her through the ruins, I took Miss Derr down Tsegie Beko to Marsh Pass where her driver met us. I went on down to Kayenta and there met her mother and spent two hours with the party at Kayenta. They left Kayenta Sunday for Chin Lee.

Temperature for the month: Maximum, 74.5, Minimum, 48.

Trails on the monument are in good shape. The road in from the
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NAVAJO (CONT.)

Tuba-Kayenta road has remained about the same, but the main road was badly washed in the rain of September 29-30. At the ruins we had 28 hours of steady rain. The trail down Tsegie Biko has washed out in a number of places. A few of the side washes were cut down as much as four feet. Kit Siel trail is about the same.

NATURE NOTES

For the past 45 days, every jay seen has been packing acorns (Quercus gambelii). The Long-crested Jays started first with the Woodhouse Jays a close second. They have been storing the acorns in cracks in the rocks and in the bark of the trees.

I brought in a few sunflower heads which I placed in the trees around camp. The sunflowers were here nearly a week before the Mountain Chickadees found them, but they made fast work of the seeds when they did start. I now have four to six feeding at camp every day.

First Juncos were seen in the canyon September 29, and at camp October 9. I set the Government Sparrow Traps and banded the first Junco the seventeenth; No. 37-44101, Junco mearnsi.

One Rallus limicola limicola was killed by a cat at W.C. Guest Ranch, Kayenta, Arizona.

On the trip down Tsegie Biko October 16, I found that the floor af the canyon from the Forks of Dogozhi Biko and Be-ta-ta-kin Biko to Marsh Pass had been heavily over-sheeped. Where it was common to see several different kinds of birds, I saw one flock of 20 House Finches, one flock of 8 Juncos, and two Woodhouse Jays; this in a distance of seven miles.

*****-*****

Chief, we had a great laugh here at headquarters over a certain report protesting against our building a road up to Be-ta-ta-kin Ruin at Navajo National Monument. So far as I know, no one in our Service ever had the slightest idea of ever bringing a road into that canyon and, personally, I would be very glad to help hang the man who ever proposed to do so. The Indian Service, as you know, built the present suggestion of a road in to the rim on top and built a trail down at the mouth of Be-ta-ta-kin Canyon, where it empties into the main canyon. All this was on Indian land over which we had no control; we did not ask for the road and had nothing to do with its construction. We are willing enough for it to come to the rim of the canyon, where it now ends, if the Indian Service will keep it passable for visitors, but, since it would cost between a quarter and a half million dollars to get it over the rim and into the main canyon, we don't think the Indian Service will ever think of bringing it any further for the three or four times they might want to use it every month in the SOUTHWESTERN MONUMENTS 282 MONTHLY REPORT FOR OCTOBER, 1937.

CASA GRANDE (CONT.)

During the month, our sewer pump gave us some trouble and is still out of order. Water from a rain the middle of September gradually worked into the pump and stopped it. We hope to have it functioning properly in a few days.

In preparation for the arrival of our CCC side camp from Chiricahua National Monument, six CCC trucks moved some portable barracks from Congress Junction to the monument. This work was done between October 11 and October 17.

Custodian Bicknell returned to duty on October 14 after taking his annual leave.

USE OF MONUMENT FACILITIES BY THE PUBLIC

Total travel: 1937, 2842; 1936, 2045; 1935, 2281; 1934, 1825.

Of the 2482 visitors to the monument, 2156 were contacted on trips through either the ruins or the museum, or both. Eighty eight hundred minutes were spent guiding 235 parties through the ruins for an average time of 37.5 minutes. One hundred fifty four parties required 2936 minutes to go through the museum for an average time of 19 minutes.

The picnic grounds were very popular this month, especially for evening picnics. One several large parties met at the monument for this purpose. Among the larger picnic parties were: 45 Casa Grande school teachers who occupied the evening of October 6; 55 people from the Coolidge Methodist Church on October 10; and 55 Coolidge, Florence and Casa Grande Veterans on October 15.

NEWSWORTHY VISITORS

The outstanding visitors of the month were Director and Mrs. Cammerer who made the monument their headquarters from October 9 to 12. All of the personnel here were delighted at the opportunity to meet or to renew acquaintances with Director Cammerer and his charming wife. During their stay, a most enjoyable evening of movies was provided by our new Junior Naturalist, Matt Dodge. The whole Coolidge force was present and, after the movies, enjoyed hearing Mr. Cammerer discuss the problems of the field and of the Washington office.

National Park Service visitors to the monument included Jess and Mrs. Jennings, (Jess is ranger at Montezuma Castle); Custodian Frank Fish and family from Chiricahua; Park Naturalist and Mrs. M. V. Walker from Petrified Forest. Headquarters visitors included Assistant Director Ben Thomson; Project Superintendent Hub Chase from Bandelier National Monument; Project Superintendent Bill Stevenson from Chiricahua

CASA GRANDE (CONT.)

National Monument; District Landscape Architect Charles Richey, and Mr. Alcott from Washington; Engineer A. V. Birney from Washington; and Chief and Mrs. Dorr Yeager of the Western Museum Laboratories.

Other newsworthy visitors to the monument were: F. D. Reilly, federal agent, Point Barrow, Alaska; Supervisor Fred Winn of the Coronado National Forest; Dr. and Mrs. George Vaillant, archeologist from the American Museum of Natural History; M. A. Wilder from the Taylor Museum at Colorado Springs, Colorado; and Wendell P. Hoge, retired astronomer from the Mt. Wilson Observatory.

IMPROVEMENTS

The construction of a grease rack by Mechanic Gene Stonehocker was begun and is now about 40% complete. During the custodian's annual leave, his residence was repaired, the kitchen was painted, and the living room calcimined.

NATURE NOTES

Returning to the monument during the month were Gambel Sparrows, Phainopepla, and more Rock Wrens and House Finches. A Cactus Wren has been observed remodelling and renovating a large nest in a Cholla Cactus behind the museum.

A fight against the English Sparrows is being waged in the hope that we can keep their numbers down.

*****O*****

Visitor statistics at Casa Grande for October are interesting. In the field trips the number of visitors decreased slightly, 2190 last year to 2156 this year; the number of trips decreased sharply, from 323 to 235; the number of persons per party rose from 6.7 to 8.1; and the minutes per trip rose from 29.4 to 37.4, but the total minutes of service dropped from 9,513 last year to 8,801 this year.

Casa Grande runs considerably larger parties than any other unit in our district, one factor causing this being that we are under-manned at this monument.

Museum trip figures show a direct drop from last year. It will be seen above that field trip visitors were about the same last year as this, but museum visitors dropped from 1865 last year to 1377 this year; there were 288 parties last year and 154 parties this year. The average party rose from 6.4 persons last year to 8.9 persons this year; the party time dropped from 22.3 last year to 19.0 this year. Here again the figures are telling us, as one factor of this drop, that we are undermanned at Casa Grande in October.

With only two men on the job, we have two days a week when only one man is working; with visitors running at the rate of 2,400 per month, one man simply cannot deliver the service required.--F. P.

*****O*****

CANYON DE CHELLY

By Johnwill Paris,
custodian.

Again comes the time when I take the pleasure of spending a few minutes telling you something of what has been happening throughout the past month. With the exception of a couple of floods, the weather has been ideal and I wish some of your folks down there might have been here to enjoy the autumns we have at de Chelly. It seems that the color of the leaves blends with the color in the canyon and it is a sight that is without equal. Come up and let me prove that statement:

The month started by my going to work on the adobes for the equipment shed. The Indians here were without any experience in that line and they said that 150 adobes was all that 5 men could make in a day. After a few days work and real effort we put out 1100 in one day. We made more than 2000 adobes and hauled some gravel and rock and I dismissed the crew to let the adobes dry and await the arrival of Doc. Gipe. One heavy rain while we were making adobes hindered our work some and did some damage to our sewer system. Two of the manholes developed leaks and must be repaired before too much silt seeps in and stops up our line. I am certainly disappointed with the prospects of our sewer system ever being satisfactory as it is a constant source of trouble. I have a couple of men working on it today and, while I doubt the work doing any good, there is nothing we can do but try and remedy the trouble as best we can. I do not know when I can attempt to repair the manholes that leak as from the appearance of the holes it might mean quite a job. I will keep close watch on them though and if they do not get any worse we can probably get by until another rainy season. A flood the sixth of the month was as destructive as any since my time here at de Chelly. I estimate that over 1000 trees were washed out in de Chelly and a vast number in del Muerto. Two canyons with the area of those at de Chelly can carry a lot of water in the heavy rains.

Two official trips to Gallup were made during the month.

A report reached me the early part of the month that a cave dwelling in Monument Canyon has some shovels, hoes, etc. in it and that they were close to other dwellings of the prehistoric people. Of course, I thought that I had me some pot hunters with all their equipment. I made a trip up there and took charge of all the implements. They consisted of several old-type grubbing hoes, two axes, a rake, bucket, and two copper kettles. Upon investigation and in talking with Earl Morris, we decided that soon after the big walk in 1864 the Indians were issued tools and provisions and this fellow just hid all his

DE CHELLY (CONT.)

working tools and the kettles and never went back for them. They are a little rusty due to just the moisture in the air over the years, but the materials in their makeup would certainly surprise a person. I am keeping them until I hear from your office. I rather imagine they will be material around which quite a story of historic value might be given in our future museum development. Any way, while I did not get me any pothunters, I got a couple of old pots of real copper.

On October 22, the Indians had a fire dance on the rim which attracted Indians and whites for miles around. I estimated the crowd to be around 1,500 or 2,000 people.

Among the visitors for the month were two from Germany, one from Africa, and one from British Honduras. Earl Morris and his family with the Shepards were in the eleventh and twelfth. Ross, ranger from Mesa Verde, was in, and on the seventeenth Miss Deer and her mother were in. Doc. and Mrs. Gipe arrived the 21st. and Gipe is hard at work already. I am going to turn this place over to him next month while I am away on vacation. We are fortunate indeed that we can have a man here while I am away. Of course he will not take care of any visitors but he is sincerely interested in the place and will certainly look after many things other than just the work he is doing.

Cozy and Inga McSparron went east for operations the middle of the month. All reports indicate they are getting along fine and they are expected home in another day or so and I will sure be glad to see them. Bob and I have had a terrible time taking care of everything with Cozy gone.

So, Boss, October adds another month to history and I think we can claim a very good month indeed for de Chelly. I am hoping that November will do as well by us.

*****O*****

It is interesting indeed if Mr. Faris has happened on a cache of tools issued to some Navajo Indian upon his return from Bosque Redondo. They would probably date between 1868 and 1870. The final treaty by which the Indians were returned to the reservation of 5,200 square miles in their old country provided that each Indian was to receive five dollars in clothing per year and each one engaged in farming or any trade received ten dollars. The head of a family could select 160 acres of land if he chose, and was in that case given \$100 in seeds and implements the first year, and \$25 for the second and third years.

From the description of the man-hole trouble on the sewer line given here, we cannot diagnose the difficulty but we hope to have Mr. Tovrea go in there on his way to Santa Fe in the next couple of weeks and see just what can be done.

DE CHELLY (CONT.)

We are very sorry to hear of the sickness of Mrs. and Mr. Mac-Sparron, and hope to hear next of their complete recovery.

Business seems to have been good this year for Johnwill as against October of last year. He had 30 field trips as against 8 last year; 104 persons as against 20 last year. Persons per party increased from 2.5 to 3.4, but time of field trip dropped from 165 minutes to 149 minutes.--F. P.

*****O*****

PIPE SPRING

By Leonard Heaton,
acting custodian.

Autumn at the monument for the past month has been ideal for us; not enough frost to damage any thing, but cool enough to ripen up the fruits and grains for harvesting. There were two good rains this month that surely helped the country a lot as well as filling most of the stock water-holes on the range.

We had the largest streams of water run through the monument on the 22nd. and 29th. of September since the new diversion ditch was completed 18 months ago. On both days, the two 18 inch culverts ran full for about two hours or more. Unless we get some heavy cloud burst, the diversion ditch will handle all the ordinary rain storms.

As a result of the rain, the late flowers and grasses have been growing a lot and I feel that good progress has been made in getting some of the bare spots of earth covered up with some vegetation besides thistles and weeds this past summer.

On October 19, I gathered some two or three hundred pinyon seeds and planted them on the monument back of the fort, on the hill where some of the trees are dying and where some of the trees were cut for fuel last winter by the CCC camp when they ran short of coal.

I have some 20 pounds of grass seed that is in the process of being cleaned, and I hope to get it planted this next month. It is taking me longer to clean the seed than I thought, as each seed is covered with small cotton-like hairs that cling to the grass stems and are hard to shake out. But I'll get them some time.

I have had as visitors to the monument the past month Al. Kuehl and Chuck Richey, of the National Park Service and G. L. McLane and W. J. Ward of the BPR on October 14. They were out on the right-of-way through the Kaibab Indian Reservation for the new road from U. S. 89 at Fredonia. The wife of Dr. H. Gregory of the U. S. Geological Survey, Washington, D. C., was also a visitor.

The total of visitors for the month is 67. Estimated travel on
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PIPE SPRING (CONT.)

monument road, other than the CCC travel, is 370. The majority of the local travel consisted of stockmen going to and from their herds. There have been several herds of cattle driven by the monument on their way to market.

I had two parties of campers this month. One party of four left early in the morning and also left a very dirty camp about which I wrote them a letter reminding them of the condition in which they left the camp and asking them to leave their camps as they would expect others to leave theirs if they intended to camp in the same place.

There have also been several parties out from town to cook their supper in the campground area.

On October 7, I received a phone call from Al. Kuehl reporting that he was stranded at Fredonia, Arizona. He had left the Grand Canyon to make a visit to Pipe Springs but had blown out two tires on the way in and could not get any extra one so I took pity on him and went to his rescue, taking him back to his car which was 12 miles east of Fredonia. I then waited until Utah Parks Company car brought out the two tires from the Canyon and put on one of the tires for him. Instead of coming out to the monument that evening, he went to Kanab and came out the next morning, spending two or more hours in making plans for the garage for the new pickup and making suggestions and inspections. He left here about 11:00 a. m.

CCC ACTIVITIES

There is not, and likely will not be, anything to report in the future on CCC projects on the monument. I have on several occasions asked Superintendent Draper about getting materials and a truck to be used on the monument and I always get the same old story: salary expense has about doubled this year as he has about twice as many foremen as last year. The trucks are in worse condition and two or more of them are in the garage all the time and his monthly allotment has been cut \$300.

When I asked him about the material for the garage, he said that it would be next month before anything could be done and he would write in and ask if he could buy the material. But I doubt if we can get it, from the way he spoke.

I have done some work on the picnic tables this past month smoothing them up and painting two of them with linseed oil. They look OK to me. Also I have tried to get some iron so that the blacksmith could make the fire grill for the camp fire-places before we build any more.

PERSONAL

The last few days I have spent in getting ready to make the trip

PIPE SPRING (CONT.)

to Headquarters and would have been on my way today if I had not received a 'phone call from Hugh calling the trip off until some later date. I am somewhat disappointed as there were several things that I wanted to discuss with you rather than try to do it by mail. But we will get through some way, and will enjoy the visit when it does come around.

CCC NOTES

On October 10, 30 boys were transferred from a Utah camp to Pipe, and on the 16th. 75 more boys came in from Fort Knox, Kentucky, bringing the camp strength up to about 200 men.

About October 12 the camp commanders were changed. Captain Hofler was released from this camp and Lieutenant Wickerham was put in command. I hope the change will be for the better.

In closing will say that everything seems to be on top and getting along fine, and I am ready to go in the ring for another month to prove that I can take it and do a better job than I did the last month.

*****O*****

To keep the record straight, I might explain here that we had to cancel Leonard's trip to headquarters to turn in his old car and check up over the past year and the one to come with a personal conference, because of the impoundment of our funds. It is just one of those things we can get along without and there will be a lot of them like this between now and next June 30.--F. P.

*****O*****

ARCHES

By Harry Reed,
custodian.

Thanks to the commissioners of Grand County, the road from U. S. Highway 450 to the Arches has received considerable attention since my last report. Eight men worked five days with a truck filling up ravines and putting shale on the sandy places. In all, approximately 90 yards of shale were used and the road is now in better condition than at any time during the year. This work was done under the supervision of Bun Titus, county road foreman and is to be paid for by Grand County.

There still remains one bad place where we have a combination of steep grade, sharp curve, and very loose sand. This is out near the end of the road and in my opinion will always be a problem as the sand is so deep it is all but impossible to keep shale on it. On October 8, Mr. and Mrs. Mark H. Harrington of Denver attempted to drive to the Arches and had the misfortune of getting stuck at this point. Not

ARCHES (CONT.)

being familiar with driving in sand, Mr. Harrington could see no way to get his car out. Leaving Mrs. Harrington with the car, he hiked the eight miles to highway 450 where he hailed a passing motorist and came to Moab for help. It was just 7:30 in the evening when he introduced himself and began telling me what had happened. We hurriedly loaded water, chains, and shovels and took off. By 10:30 we were back in Moab. Although very much disappointed in not getting to see the Arches, they were both actually thrilled by their experience. Mr. and Mrs. Harrington were visitors to Mesa Verde National Park and were directed to the Arches by Mr. Franke who advised them to look me up at Moab. For some reason, Mr. Harrington got the idea he would find me at the Arches and did not stop here. They both agreed to return to Moab in the near future to make the trip to the Arches with me.

VISITORS

I find it very difficult to get an accurate check on the number of visitors to the Arches. It is possible to contact only a small percent of them as many come to the monument from the north and return without coming to Moab. Others pass through Moab without stopping. Totaling the number I have contacted with the number reported to me by others and allowing for the few who were not contacted by anyone, I would say about 80 persons have visited the monument the last 30 days.

PARK SERVICE OFFICIALS

On Monday, October 4, we had a very short visit with a party of prominent officials of the National Park Service who were passing through Moab enroute to Colorado National Monument. In the party were O. G. Taylor of Washington, D. C., chief engineer of the National Park Service; J. H. Diehl, landscape engineer, of Oklahoma City, and Jesse Nusbaum, superintendent of Mesa Verde National Park. Mr. Taylor was accompanied by his wife. On October 19, Assistant Superintendent Paul Franke stopped at the Arches enroute to Mesa Verde National Park.

*****O*****

It looks like Harry Reed is another good man in the right place when it comes to helping visitors out of a little trouble. There wasn't a particle of danger in the episode he relates but an otherwise disagreeable experience was turned into a thrill by the response these visitors got from a nominally paid custodian. Of course, Mr. and Mrs. Harrington will be back later and Harry has made two more boosters for the Arches and for Moab and it will not be long before we branch them out into Southwestern Monument fans; this is the normal course of many such cases we could point out.--F. P.

*****O*****

CHACO CANYON

By Lewis T. McKinney
custodian.

Well, well, this last thirty days surely has rolled off so fast that it seems only yesterday that I was trying to think of something to put in the September report, and here it is October and I have to think again. Here I am again with a few words about Chaco and the happenings "hereabouts".

Things look pretty fine over here in God's country even if we did almost lose part of it during a rain storm or two. Didn't see any of it pass that way, did you Boss? Some of the monument certainly left here in a hurry.

Boss, tell Dale King and the Steen that if they want to do any work on the small site I spoke of in my last report, they had better get up here for if they wait many more such rains as we have had this month, they can hunt for them over in that part of the country. Maybe that is what they are waiting for, so they won't have to get out in this nice cool weather we are having.

I left God's country and went over to Aztec after coal three times this month. I have to make two more trips over there for coal and a couple to Gallup for Flamo gas etc. and then I will be ready for about a five months hibernation, as some of the custodians call it. But if there is anyone that wants to come up and help me hibernate, he is certainly welcome. There are more than 30 miles of fence to repair, cattle-guards to clean out, tumble weeds to clear away from the fence so we can find it after the March winds, which blow here during February, March, and April, are over. Then there are water gaps to repair and several to completely rebuild after our rains a few days back and, of course, the road needs a lot of repairing. The bridge must have some work done on it, so there will be something there to wash out next year. And there are new garbage pits to dig, remedies to repair, and I would like to build a couple more new ones. Fire places must be built and the old ones repaired. There is wood to haul and cut, display cases in my black-smith shop to repaint, pit toilets to be built and hundreds of things that come up between times to attend to so I can very easily use any help that comes along. Hugh Miller, don't let this scare you from coming to Chaco this winter for I promise you that you can have the best shovel I have (the one I stole from the neighbors). The handle won't break either, for I have leaned 195 pounds against it lots of times and it hasn't even cracked.

The Soil Conservation Service has started in work within the Chaco again; only maintenance until their study group make a complete study of the entire area. Mr. Morris, an old timer in these here parts of the country, is in charge of the work. Mr. Morris knows the Navajos and knows his work, so we can expect something worth while to be done.

CHACO CANYON (CONT.)

There were not many visitors this month as roads have been pretty tough both directions. Only 391 people went through the monument, in 109 cars and trucks. Three aeroplanes took a peek at us from above, but didn't stop and register. There is something funny about those aviators. They must think they are too high up in the world to take a look at my little museum and put their names in our tally book.

The School of American Research, State Museum, and the University of New Mexico are building six more hogans. What will the Augurologist think when they dig all of these buildings out some 10 centuries from now and find these twelve kivas, no bench, no ventilator shaft, a fire place but no deflector, entrance in the north which would make them think we had warm weather the year around in this country about 1937 A. D.? Gosh, sometimes I think this would even give a custodian a headache.

The CCC's are sure making old Pueblo Bonito lift up its head. I believe it will stand the winter if I can stay out of Gordon's way long enough. I think Sir Vivian made some kind of a crack last month about trading me off for a rock-mason. I can't see the point when I was the teacher for every rock-mason he has. The other day after about a thirty minute lecture at his First-aid meeting, Vivian asked if there were any questions concerning first aid. One old Indian (thinking of first aid to his stomach) wanted to know when the checks would be in.

WEATHER

That is all we have had this month: 2.25 inches of rain, about 2 inches of hail on the south side of the monument, wind, mud, water, frogs, and most everything; but no pitchforks fell.

Temperature

Maximum-	- - - - -	-83°
Minimum-	- - - - -	-24°

Cloudy days-	- - - - -	9
Partly cloudy days	- - - - -	11
Clear-	- - - - -	10

GENERAL

We have the new signs up at the turn-off at Thoreau from Highway 66, and at Otis's trading post, from highway 55, which were put up by the State of New Mexico. Sure fine looking signs, Boss. As soon as I can get around to it, I will take a picture of them and send you one.

Threatening Rock measures 2 1/8" at east end, 2 1/4" at the center, 2 3/16" at the west end, all three measurements were 2" in the month of August when Dr. Keur made his marks to measure by. (See my September

CHACO CANYON (CONT.)

report for more detail.)

*****O*****

Speaking of Threatening Rock reminds me of something good which Homer Hastings wrote me this past month. Homer was saying that when he and John Kour and Mrs. Hastings and Lot were up on top of the rock making some measurements, he, Homer, was doing the measuring and John was holding a life line on him to keep him from going overboard. John braced himself very carefully in a sitting position and Homer slid down to the edge of the rock and spent several minutes in getting his measurements. He even took time to drop several pebbles over the cliff and count the seconds of fall, thus estimating the height of the cliff at that point. The girls noticed that John had a peculiar expression, a sort of strained look on his face, during this time but he said nothing until Homer had scrambled back to safety when it developed that John was sitting on an ant hill all that time and the ants resented the intrusion in their usual vigorous fashion!

Business at Chaco was not quite so good as last year. There were seven less field trips, 66 less visitors taking them, 1465 less minutes spent, and the average trip dropped from 81.3 minutes to 62.3 minutes. In the museum, the trips dropped from 51 last year to 25 this year, persons dropped from 209 to 77, total time dropped from 940 to 745 minutes. The average museum trip rose sharply however, from 18.5 minutes to 29.8 minutes.--F. P.

*****O*****

TONTO

By Tom Onstott, ranger
in charge.

The visitors are at last beginning to pile in. The last two weeks there have been roughly 150 visitors, making a total of 250 (estimated). As the museum has been closed, there are only 50 names on the register.

The guttering is rather slow work. It seems that when a rock which is showing six inches above the surface has to be moved, that a shaft must be started 20 feet away and run on a 40 per cent grade to reach the bottom of it. (Slight exaggeration for emphasis).

Outside of the guttering, the rest of the time has been spent filling the wash-outs and surfacing the worst places.

Quite a bit of time has been taken off this month by the writer as he had some incomplete courses at the University of Arizona to straighten out. In addition, he attended a rather unexpected wedding. (Page Steen).

TONTO (CONT.)

The evening of October 15, 1937 marks a rather exciting episode in Tonto's history. It so happened that I returned home quite late from a birthday dinner at Roosevelt and, in the usual manner, lit the lamp. The sight that met my eyes was nothing short of startling. Clothes and food was strewn all over the place making it look for all the world as if someone had started to break up housekeeping in earnest. Further investigation revealed the business end of a half grown skunk protruding from beneath the kitchen cabinet. The tail was at full mast and it took only a glance to see he was cocked, primed, and ready for action. I blew out the lamp and staged a hasty retreat to the roof to comparative safety and bed. The next day the invader was gone but the house had a strange odor that wasn't "Essence of Spring" either.

Boss, that man up at Canyon de Chelly had his nerve, bragging about those two long deep ruts in the sandstone and all the work he is doing to deepen and widen them. He just has to be busy on that monument whereas Aztec and Tonto don't need so much work; they are fine as they stand.

*****O*****

WUPATKI

By David J. Jones, ranger
in charge.

VISITOR TRAVEL

Visitor travel to Wupatki reached a new "low" for the month with 26 registering at the Citadel and 69 at Wupatki. Ten of these names being duplicates results in a total of 85 visitors for October, 1937. The visitors represented 13 states, Arizona and California being in the lead. One registered from Chile, South America.

ROADS

Both entrances to the monument are passable, but the one through Sunset Crater is to be preferred as it is not quite as rough as the one through the Citadel. Highway 89 is still under construction at both entrances.

WEATHER

Days clear-	- - - - -	-24
Days partly cloudy-	- - - - -	6
Days cloudy	- - - - -	1
Maximum temperature	- - - - -	-88°
Minimum temperature	- - - - -	-38°
Average maximum temperature	- - - - -	-73.8°
Average minimum temperature	- - - - -	-51.2°
Anemometer reading-	- - - - -	-40,145.4 miles.

WUPATKI (CONT.)

In general we have had the usual "Indian summer". On the 24th, we had about 1.4 inches of rain. In my quarters I expected the mud roof to drip upon me at any minute. Fortunately, it didn't. As a matter of fact, the rain did very little damage.

NEWSWORTHY VISITORS

Walt Taylor and his wife on October 3. Walt is taking McGregor's place in the Archeology Department at the College while the latter is attending the University of Chicago. In 1936 he had a Laboratory of Anthropology fellowship and worked on the dig at Ocmulgee. Paul and I are learning something about one of our Southeastern monuments.

On October 8, O. L. McClure, R. W. Hussey, and E. G. Miller, of the Forest Service stopped in to look over the ruins.

Al. Purchase (Soil Conservation) and wife on the 9th.

T. M. Wilson, American Consul General at Sydney, Australia, spent several hours looking over the monument.

Lyn Hargrave and Paul Phillips (Soil Conservation) stayed overnight on the 3rd.

GENERAL

On October 9, I accompanied Lyn Hargrave and Paul Phillips to a site about six miles from Wupatki where the museum excavated several years ago. The trip was very informative as the site was occupied by people who were here before the Wupatkians.

I made a plant collection of the flowers in bloom on October 7 and 8. Al. Purchase was very helpful in identifying some of the species. Clyde told me some of the uses to which the Navajos put the plants, but I want to check with him again before sending them in.

On the 16th, I packed the sherds from the C. W. A. dig and took them into the museum. The next trip I intend to take the sherds from Room 7 as they are valuable and we have no place to store them here.

For the past two weeks Clyde has been living in the exhibit hogan. A brother of Sally's fell from a horse near Grey Mountain (Coconino Point) and was brought over here for a sing. The first one was held about a week ago when a medicine man came up from Leupp. The boy is well now, so they are holding another tonight.

You know, Boss, I still blame the highway for our lack of visitors. Usually more people register at the Citadel than at Wupatki. This month Wupatki is far in the lead with most of the visitors coming

by way of Sunset Crater.

*****O*****

It is interesting to see that Davy's museum time has moved up from 15.6 minutes last month to 19.6 this month. Here is a new man who is just getting oriented in our service and who has a shoe-string museum. In two or three months he is holding the average museum party 19.6 minutes. The seven museums reporting this month had an average trip of 18.2 minutes. It looks a little like the answer to increasing the stay of the visitor in our museums, assuming that to be desirable, lies more in a study of the guide and a revamping of his talk than in studying and rearranging the materials.--F. P.

*****O*****

CAPULIN MOUNTAIN

By Homer J. Farr,
custodian.

This report for October shows approximately 1100 visitors. Federal Highway 87, both east and west of Capulin, being under constant construction during the month, has cut our travel some and this will continue throughout the winter it is presumed.

Weather has been delightful all month and very warm and fine. I don't remember a nicer October than this one. Wild life Technician McDougal was in on the twelfth and was a very pleasant caller. He and the custodian covered the Capulin Mountain partly, but we found it so foggy that we were unable to see any distance. This man Mac seems like a darn nice fellow and I believe he knows his animals.

The custodian is planning a small amount of much needed work on the road the first part of next month. This will be in the form of repairing the road where the last July floods washed down the outside of the fill narrowing the road and endangering the travelers. I hope to make a decent report next month; am mighty tired tonight as I baled hay all day today.

*****O*****

NATURAL BRIDGES

By Zeke Johnson,
custodian.

I hope that my report won't be late. I was at the Bridges and made a mistake in the date by one day. I have had a very busy month.

Weather is ideal and roads in tip-top shape--such as they are--and so many pine-nut hunters and also deer shooters.

This evening as I came in I met 12 men and 24 saddle and pack

NATURAL BRIDGE (CONT.)

horses all heading for the crossing of the Colorado River. They will be met there by another outfit to take them the rest of the way over the proposed route from here to the Capital Reef National Monument. There were two men in the party from Washington, D. C., representing the Bureau of Public Roads, also four representing the Utah State Road Commission, two from the Associated Civic Clubs of Southern Utah, two from the State Chamber of Commerce, and two packers. They camp at Kigalea tonight and I will be with them at Bridges tomorrow. It looks as if something may be doing about that long-talked-of road. If that road should be built, it would surely put this country on the map.

I hiked all day today with 17 people all from the North and a very representative group. Most of them were members of the State Board of Education. One lady was from State College, Pennsylvania.

One hundred nine registered this month, and I have contacted all but 11. They were people who came and went while I was out hiking with others. Two parties came but didn't register and I don't know how many there were of them. It is hard to estimate the time spent in conversation or talks about the monument, as when we hike from four to ten hours, we talk about the monument and its many attractions almost all the time. Of course, when we just visit the Edwin, it is easy to keep track of the time spent in contact work. Perhaps ten minutes each would not be far off making, for the 98 people, 980 minutes.

I am sure that I will be plenty busy all this next month. There are still lots of nuts with Whites and Blacks both busy gathering them. The deer season continues until October 31, so I will have the hunters to look after. I believe that there are 100 and possibly double that number of does and fawns within two miles of my camp. Many of them are on the point between the Augusta and Edwin. I still have my three sheep up the canyon above the August; also one lamb. If bad weather comes and people don't rush me, I will have a pony out there and do a lot of trail work and also some clean-up of the ruins that Charley asked me to do. I have taken out some baled hay and also a sack of oats for that purpose. I want to do considerable work near the Augusta and it is too far to walk.

Mrs. Johnson and I are both well and raring to go for the rest of the season.

*****O*****

BANDELIER RUINS STABILIZATION By J. W. Hendron, foreman.

Last month I mentioned the deplorable condition of the reconstructed talus lodge, north of the large community house, rebuilt by the Museum of New Mexico a number of years ago while Bandelier was still under the administration of the Forest Service.

BANDELIER RUINS STABILIZATION (CONT.)

This dwelling is made up of five rooms, the floors of the two front rooms being on the same level while the two rooms in back adjoining the cliff are built with floor levels approximately 34 inches above those of the two front rooms. This lends a terraced effect to the house due to the fact that the rooms were constructed on a slope. The fifth room is entered from the roof of one of the terraced rooms through a small doorway while the other four rooms are either entered through hatchways in the roofs or through small doorways in the walls of the first two rooms mentioned.

In the center of the back wall of one of the terraced rooms is a small doorway 13 inches above the floor leading into a shaft cut out of the cliff. It was roofed over and there was no entrance through the top. The use of the shaft is unknown but it appears to have been a receptacle of some sort.

The actual condition of the house could not be accurately determined until some of the roofing material was removed and this showed that it was worse than would appear at a glance. The plaster on the walls had cracked in the case of each room and they were literally covered with the initials and names of visitors. One of the front rooms had a crack in one of its side walls which left it so loose that it could easily be moved back and forth with one hand. The crack was cemented together and a protecting wall was built to the outside of the room. If the reconstruction of this series of dwellings had continued another room would have been joined on to the east side of the one under discussion. The old viga holes are still present in the cliff for the first story, giving us something definite to base the building of the protecting wall on. It so happened that this break occurred in a spot where the front wall of another room might have been joined on. This bit of reconstruction is somewhat different than the building of an ordinary wall of a room in that it was sunk into the ground about 18 inches and set in cement. The wall varies in length considerably and has rough edges resembling a portion of a wall of another room that had remained standing. This is the only way the east wall of the lodge could be made steady without rebuilding the entire side.

In the case of each of the five rooms, the parapet walls around the top had become disjointed, only a few of the stones remaining on the roofs. There were places where the hands could be shoved through the roofs to the inside of the rooms. In removing the old roofing material, the method of construction could easily be determined. Vigas of oak were placed in holes in the cliff or in the front wall of another room and then mudded, then laid over the front wall of the room. Small poles of willow were laid across the vigas and nailed, their ends or points being mudded into the side walls. In one case small willows were found to be laid across the vigas very close together. This seems to make a much tighter roofing and also serves as a better base for the succeeding layer of brush and grass which was followed by

BANDELIER RUINS STABILIZATION (CONT.)

several inches of mud which apparently had a little cement in it. Two-by-fours were set up on the narrow side in the mud and nailed to either the vigas or smaller poles. These served as a nailing base for the following layer of tar paper which was laid approximately half way into the walls. When the parapet wall was placed over the top, there was enough space to make ties with the wall and at the same time it held the edges of the paper. A flashing of cement was used on the inside of the parapet wall and connected to the tarpaper. It is thought that several inches of dirt were placed over the paper.

Generally speaking the same method of construction was followed as was found, but it was necessary to make some departures. Instead of using oak vigas we used pine and also vigas of pine instead of willow. Willow branches in the case of each room were placed and nailed over the vigas, followed by twigs and smaller branches to support the thick coating of grass. In the grass we put small chunks of tuff or volcanic ash to hold the two or three inches of mud. Two-by-fours were sunk in the mud and nailed to the poles. A coating of hot tar was mopped over the mud and before it had hardened a layer of paper was put on and nailed to the two-by-fours. The edges of the paper were sealed with tar and then the paper was mopped over. The parapet wall was laid around the top and a flashing brought down to protect the joints. Several inches of mud over the top finished the roofing job.

Drainage was cared for by sloping the roofs to the outside or front, and a canale of pine was placed in each roof.

Three of the rooms had hatchways in the roofs consisting of short pieces of pine notched at the ends so that they would fit over one another. The entrances were small, only large enough to enable a person to squeeze through. One of the front rooms had a small chimney in one corner with a wall of small chunks of tuff cemented together around it. This was replaced as nearly as possible like the original.

All five rooms were plastered on the inside, the lower 34 inches of the walls being washed with a reddish brown or orange colored clay, while the upper portions were plastered with a natural color mud. It is not known why rooms were given a final touching up to this height. The same situation exists in most of the cave rooms but under somewhat different conditions, the ceilings being covered with soot from the fires. It may be that it was a measure for keeping the rooms clean, thus plastering the walls whenever the smoke extended down from the ceiling and blackened them. Of course, this is a reconstruction and the same motive may have been used as in the caves. It does lend a better appearance however.

Upon completing the roofing job on the talus lodge, we proceeded to the Ceremonial Cave three quarters of a mile up the canyon. The cave is detached from the rest of the village and this might suggest

BANDELIER RUINS STABILIZATION (CONT.)

that it was used as a shrine, a place where individuals might go to worship, but on the other hand it is said that there were 22 rooms in it at one time and the smoke or blackening from fires can still be seen on the roof of the cave and also places where walls were plastered to the top of the cave. Ninety feet of ladders were built and placed against the cliff wall so that it would be accessible.

Our primary interest here is the small kiva which was rebuilt a number of years ago. In removing the old roof, it was found that old newspapers had been used in the previous reconstruction. Fortunately one was found which gave us a clue. It was the Denver Post dated August 23, 1910 and the mailing label was addressed to Jesse L. Nusbaum, box 251. The exact amount of reconstruction done by Mr. Nusbaum is unknown, but at any rate the 27 years of weathering left its mark on the little kiva. The dirt on the top was beginning to fall to the inside due to the fact that the under layers of pine needles, newspapers and juniper boughs had rotted. The vigas which were of pine were still in fair shape but had dried out considerably. The large vigas were still good but it was thought better to replace them since some of the wall of the structure had fallen away and the loose building blocks had to be removed anyway.

Although this kiva is small, its type of construction is the same or similar to that of the large kiva previously described. Evenly cut blocks were used on the inside while rough chunks were used on the outside more as a retaining wall than anything else. Although most of these blocks have fallen away, they left imprints in the remaining portion of the wall (that is, the mud casts were still there so we knew that the wall in the beginning must have been much thicker) and too, since the ground slopes to the southwest, a much stronger wall had to be built on that side. The outside shaft of the ventilator was even with the ground level having fallen away, and as a matter of fact the inside of the ventilator was about ready to fall, the right side of the lintel resting only on mud plaster.

At the present time this retaining wall is being set back in place and a jack is being used to hold up the lintel of the ventilator.

Another problem exists in the Ceremonial Cave and that is one of erosion. Constant dripping of water from the top or overhanging roof is tearing out the floor of the cave. Even though the actual drops do not reach the plastered floor, the base is being gradually cut back. This is one of the main reasons for the breaking down of the kiva due to the fact that it is in the front of the cave and the southwest side of the wall does come in direct contact with moisture. Little by little the dirt is washing away and in a few years a big hole will be all that is left of the Ceremonial Cave.

*****O*****

WALNUT CANYON

By Paul Beaubien, junior
park archeologist.

Eight hundred and forty one visitors registered this month, and 694 are listed as educational contacts. Now that traffic has decreased, making it possible to contact a higher percentage of visitors, many do not wish to be contacted. They are local people who have been here time and time again. There were no Park Service visitors.

On October 17, Norman G. Wallace of the State Highway Department was a visitor. He has been locating a new route for Highway 66 between Flagstaff and the new bridge over Padre Canyon east of here. The new road parallels the Santa Fe Railroad just north of Walnut Canyon, and will be only three miles away. The cut where the anticipated overpass was to be constructed on the proposed entrance road to Walnut Canyon is to be abandoned by the Santa Fe in a program of curve straightening demanded by the new high speed trains. So, if the time ever comes when an entrance road to Walnut seems probable, a new route must be located. It can be some four miles shorter than was thought two years ago.

The old Dodge truck, U.S.D.I. 1817, was towed to the junk yard--so the prayers of many Park Service employees, rangers, custodians, and engineers alike, have not been in vain. (Only it has probably been the target of more curses than prayers.) The appearance of the monument was greatly improved by its removal, and a possibility suggests itself of having the chicken house, storeroom, and my cow-shed domicile removed some dark night to further improve appearances here. But then the latter are not on the monument. In fact, there are no improvements on the monument. It seems that Walnut Canyon is destined to be vandalized instead of improved.

During the month, two direction signs were painted, some steps on the trail repaired with cement, and the filter to the cistern cleaned. I never knew before that worms (three species noted) liked to live in a mixture of charcoal and gravel. Some piki bread, several varieties of Indian corn on the cob, some corn in different stages of grinding, a sample of yucca root for soap, and seven types of beans (said to be prehistoric varieties by several old Hopis) were added to the museum collection in the office.

As it is better to report something late than never, I'll now tell of a happening that should have been recorded a year ago. One evening last fall, I had as guests Charles Amsden of the Southwest Museum, Sally and Jimmy Brower. During the evening Mr. Amsden volunteered to have Wupatki and Walnut placed on the mailing list of the publication, "The Masterkey". The winter issues are missing, but they have come regularly since I returned from Saguaro last spring. Other publications which Walnut Canyon is receiving, free of charge are "Indians at Work" and "Arizona Highways". Both contain articles which are excellent

and helpful.

I have arranged with Dale King to let me operate the bird banding station here as a sub-station of Casa Grande. He can slave at the reports, send bands, etc., while I have the fun of banding birds. I believe the annual report of bird banding will be more impressive if grouped under one station, and there will be no red tape to unwind with changing personnel.

A supply of Dale's bands arrived on October 23 and I could band only part of one day before writing this report. During that time the following birds were banded: 47 Crossbills, 10 Chestnut-backed Bluebirds, 4 Lewis Woodpeckers, 2 Mearns Woodpeckers, 1 Rocky Mountain Nuthatch, 1 Red-naped Sapsucker, and 1 Mountain Chickadee. There were 6 returns: 1 Western Robin, 3 Pygmy Nuthatches, and 2 Chestnut-backed Bluebirds.

*****O*****

Walnut Canyon had 841 visitors against 758 last year. Number of field trips dropped from 77 to 62. Total number taking field trips dropped from 253 to 240. Number of minutes devoted to field trips rose from 1352 to 1545. The average party time rose from 17.2 minutes to 24.9 minutes.

Museum parties dropped from 149 to 125. Number of persons were practically the same, 450 last year, 454 this year. Total minutes in the museum dropped from 3195 to 2350. The average museum talk dropped from 21.4 minutes to 18.0 minutes. I wonder why the field trip rises while the museum talk falls?--F. P.

*****O*****

Forestry Foreman James T. Fulton reports: "For the past month, I have been painting the Hotel Dining Room Unit with the help of three enrollees. In another week the decorations will have been completed."

*****O*****

CASA DE STEENO

The latest monument established in this part of the Park Service is the House of Steen completed on October 9 with the marriage of Miss Mary Onstott of Tucson to Charlie R. Steen, junior park archeologist. Mrs. Steen received her master's degree from the University of Arizona in 1933, and Charlie was graduated in 1932 from the University of Denver. He has been in the Park Service for three years. After January 1, 1938, Charlie and Mary will probably make their home at Tumacacori National Monument for the balance of the fiscal year.

*****O*****

Tucson papers headlined, "Joined to Coolidge Man in Simple Service". It is really the Park Service, Mary, and we are not as simple as we look. Welcome to our midst.--F. P.

HEADQUARTERS

BRANCH OF EDUCATION

By Dale S. King, park
naturalist.

The educational staff for the month of October was composed of Park Naturalist King, Junior Archeologist Steen, and Junior Naturalist Dodge, who were all on duty the whole month except Steen who took five and one half days annual leave.

In addition to stepping right out and getting married so fast that it made everyone's head swim, Steen managed to put in quite a busy month. His time was spent as follows:

	<u>DAYS</u>
White Sands exhibit planning (including $2\frac{1}{2}$ days at the University of Arizona Library.....	5
Animal collections.....	$2\frac{1}{2}$
Relief ranger at Casa Grande.....	2
General reading and discussion.....	1
Photograph files.....	4
Ruins stabilization plans for Aztec Ruins.....	$\frac{1}{2}$
Monthly Report.....	2
Correspondence.....	$\frac{1}{2}$
Annual leave.....	$5\frac{1}{2}$

The major portion of Dodge's time was consumed by two projects, (1) the Monthly Report and (2) establishment of an adequate boundary patrol at Saguaro National Monument to protect the herd of White-tailed Deer there against poaching during hunting season. While on the latter project he spent 10 days in Tucson and the monument. His activities follow:

	<u>DAYS</u>
Guiding at Casa Grande.....	$1\frac{1}{2}$
Editing and mimeographing Monthly Report.....	7
Establishing Saguaro game patrol.....	10
Planning Bendelier wildlife exhibit.....	$\frac{1}{2}$
Conferences on establishing Southwestern Monuments Association.....	$\frac{1}{2}$
Label preparation for Pipe Spring.....	$\frac{1}{4}$
Research on Tumacacori planting program.....	1
Miscellaneous: photography, writing of five letters, mimeographing 500 observation cards, binding monthly report volumes.....	$2\frac{1}{4}$

King went to Phoenix the afternoon of October 7 to obtain a car for Director Cammerer, made trips to Tumacacori October 13 and 27. He was on duty in the office during the rest of the month.

King's office work was a little heavier than usual, caused by the

HEADQUARTERS, BRANCH OF EDUCATION (CONT.)

preparation of reports at the end of the travel year. Office work included:

DAYS

146 Letters.
 Annual Travel Report.
 Animal Census Report Summary.
 Ranger-naturalist personnel reports.
 1937 Bird Banding Report.
 Continued ordering books for SWM Loan Library.
 Revision of SWM Stencil 16.
 Sent bird banding supplies to Walnut Canyon, Mupatki
 Time Spent..... 16
 Monthly Report..... $\frac{1}{4}$
 The time spent on general planning was distributed as follows:
 Ninth period CCC program for Mobile Unit.... $\frac{3}{4}$
 Ninth period CCC program for Bandelier ruins
 stabilization..... $\frac{1}{4}$
 Discussion of educational problems with visitors:
 Ranger Jesse Jennings of Montezuma Castle; Dr.
 and Mrs. George Vaillant of the American Museum
 of Natural History; Dr. Isabelle Kelly of Gila
 Pueblo; Mr. and Mrs. M. A. Wilder of the Taylor
 Museum of Colorado Springs; Mr. and Mrs. Dorris G.
 Yeager of the Western Museum Laboratories; Dr.
 and Mrs. H. P. Mearns of Laboratory of Anthropology..... $1\frac{1}{2}$
 Organization of the Southwestern Monuments
 Association..... 3
 Organize Saguaro game patrol..... $\frac{1}{4}$
 Discussion of 1938 budget..... $\frac{1}{4}$
 Relief guiding for Casa Grande..... $1\frac{1}{4}$

Mimeographed by the Branch of Education for September but not reported were:

5,000 2-page informational pamphlets for Bandelier
 1,000 1-page Chiricahua regulations
 1,000 2-page informational pamphlets for Casa Grande
 Mimeographed in October:
 500 observation cards for natural history
 1,000 SWM Stencil 16, 3rd revision
 Accessions in October:
 300 biological specimen labels
 50 tribal maps of North America
 20 gallons grain alcohol
 12 maps of Indian Country from Automobile Club of
 Southern California.
 1 study skin of Black-footed Ferret for El Morro

HEADQUARTERS, BRANCH OF EDUCATION (CONT.)

- 1 Gila Monster Skull
- 1 toad skeleton
- 1 Kangaroo Rat skeleton
- 1 study skin of bat

During October the Southwestern Monuments Loan Library received:

- 53 books
- 29 periodicals
- 13 pamphlets
- 4 reprints

Twenty seven books were issued by the loan desk. Records have been kept current, but cataloguing has fallen far behind.

*****O*****

ROVING RANGER

By James W. Brewer, Jr.,
roving ranger.

HOVENWEEP:

The panoramic view from any advantageous point in the Hovenweep: slightly east or south; the Carrizo Mountains with Pastora Peak rising 9,420 feet above sea level. The Navajo name for the Carrizo Mountains is Dzil Naozili "The Mountains Surrounded by Mountains". Viewed from the Hovenweep, the Carrizos are well named; Carrizo seems to be surrounded by Chuskas.

The use of Chuska for this entire range has been approved by the U. S. Geographic Board but the subdivision (from north to south) Lukachukai, Tunitcha; and Chuska are retained for purposes of description as well as for historical reasons. (Lukachukai--patches of white reeds; Tunitcha--much water; Chuska--white spruce).

1. Named by W. W. Holmes in 1875.
2. Navajo Country--H. E. Gregory, 1916.

To the south west, from the Cajon Group, one can see the monuments in Monument Valley, and little wonder, because many of them stand well over a thousand feet.

North or west, one can see Bear Flat, (Elk? Mountain) with the prominent "Bears Ears", and then the Blue Mountains (Utah).

In a northerly direction, the La Sal mountains are prominent--and from left to right, the San Miguel's, Lone Cone, the La Plattas, and Mesa Verde then the Sleeping Ute and, east or south, Shiprock and back to the Chuskas.

El Morro: I left a few notes with Bud on the happenings at El Morro and they are probably in his report.

I left El Morro on October 15 in a cloud of contact-breaker trouble eventually having to be towed to Gallup. Bud came to my rescue here and put a short end to my black out-look. (Bud and Betty looked mighty fit for a hard winter when they got back from annual leave.)

Casa Grande: Such long faces; Al and Don looked so glum when I arrived, I wondered where the corpse was hidden. Hugh and Dale looked like they had just bid a slam and gone down six. Charlie was wearing the only smile, and little wonder. Congratulations Charlie! The best of luck to you and Mary.

Saguaro: Arrived here the 19th and met Junior Park Naturalist Natt Dodge who had the game protective patrol well in hand. Natt showed me the boundaries and I could hardly see the monument for all the fine "Game Reserve" signs he had posted. If a hunter gets in here it won't be by mistake.

With the swell cooperation of Mr. Burnham of CCC Camp SP-11, I think the Saguaro deer are safe. Mr. Burnham has a crew of five (doubled on week-ends) patrolling the north and west lines. These are the real approach roads to the monument. I'm making the Rincon Ranger Station my headquarters and have turned away several parties of hunters from the south boundary.

The only unprotected side is the east, and there is only one good approach road and that is marked by a sign three feet square, placed so that no one can miss it.

*****O*****

MOBILE UNIT

By Gordon Vivian,
archeologist foreman.

The Mobile Unit seems to have spent most of this month finishing up a lot of things that it started in September so there aren't so many individual jobs to report. I am probably kidding myself, but we seem to be getting the repair a little better organized now and concentrated some so that I don't have as many odd jobs going on in strange places all at once.

At the last writing we were working on the west wall of Room 263, the south and east walls of Room 163, the exteriors of Kivas D, E, and I, and small spots on the interiors of Kivas J and E.

MOBILE UNIT (CONT.)

All of this has now been completed. That is, one wall almost wholly rebuilt and two repaired with a combined support and repair job on Kiva D, and exterior facing on parts of E and I with a little patching on J and L.

Only a small amount of drainage work has been undertaken this month as I am trying to save as much of this work as possible for colder weather. What was done centered around the areas between Kivas I and J. A small room entirely covered with concrete capping was found here. It does not appear on the map as a room but is shown only as a large triangular area.

Of the new work undertaken this month, almost all centered on the interiors of Kivas D and C. At D a single large patch was put in the upper part of the wall on the north side and three small areas were repaired on the west and south sides. A small spot of veneer was replaced on the east, and at present a larger area of veneer above it is being removed and replaced. The small areas mentioned are at the bottom of the wall where squared beams that ran out over the bench have rotted out and let the veneer which they supported fall.

At Kiva C, the entire east half of the wall has been repaired. Some of this required replacement of fallen veneer and some the removal of soft and rotted stones. Work of the same character is now nearing completion on the west half of the structure. Both of these jobs, C and D, are at about the highest part of the center of the east curve of Bonito and difficult to reach with mortar and rock.

When it comes to the well, I can't say so much for the Unit. It isn't finished. It is a slow proposition and a long way from Bonito. I used to enable between Bonito and the pile of forms and memorandums that I call an office but now if I walk briskly all day I can spend a few minutes with each. I don't like the well particularly and I will be very happy when it is finished. Anyway we are down now a couple of feet below the first level of what is neither water nor quicksand but is something of both. A load of mine-lugging is on hand and we are driving it around the sides to keep whatever that stuff is from caving in. One side is driven part way and there are only three more sides to go. Then more digging and bucketing.

Unlike the toothache that stops at the dentist's office, the water situation is not improving as the new well goes deeper. We ran completely out this afternoon and the men at Bonito spent the rest of the time cleaning up and sorting rock; and a small crew has moved in for the Soil Conservation. I understand that they are to do some concrete work and, to make this even worse, that they have a pressure system of some sort that fits onto a tank truck. This is to be used for washing the rock before it is set in the concrete.

MOBILE UNIT (CONT.)

The stabilizer came today and I was surprised to see that we have to protect it from freezing. It's in what is called the Judd room at Bonito which Mac. says is frostproof. So far there is no word from the soil samples which were sent to San Francisco.

The office work, like the well, crawls along. All of the individual job report sheets are up to date, the 200-odd photographs have the additional information typed on the backs and about half of them are pasted on the blank paper. Tomorrow and Sunday I'll catch up on the "after" pictures.

*****O*****

Gordon, that was a good joke Lewis told on you and your safety meeting with its proof of the deep interest of your listeners. You boys running the CCC camps have my sympathy in trying to get safety measures across to the fellows. It reminds me of a young father who went to some length (too much, perhaps) to explain some sin of omission or commission. The child kept his eye fixed on his father's face during the long talk and, at the end, seeing that he was expected to say something, made the interested observation: "It's your lower jaw that wiggles when you talk, isn't it, father?". He never understood until years later why he got spanked. Of course I am not proposing that you spank a dozen or so full grown Navajos, but I know from experience that there are times when you would like to do so.--F. P.

*****O*****

VISITOR STATISTICS

By the Boss.

We took our usual drop in October which is a "between seasons" time for visitors when the summer stations are going down and the winter stations are going up, both being off their peak.

We had 17,412 visitors for the month which is an increase over last year when we had 14,869. With these 17,412 visitors, we made 9,151 informational contacts, or 52.5%. This isn't as good as last year when we reached 10,897 of our 14,869 visitors, or 73.2%.

As nearly as we can check, we missed 11,080 visitors last month with our service, mostly because they went to the wrong monuments where we do not yet have personnel to explain things to them.

Our boys made 1,772 trips with visitors last month, 1,114 of them being field trips and 658 being museum talks. Both are down from last year when we had 1,348 field trips and 997 museum talks.

On the 1,114 field trips we handled 5,836 visitors, averaging 5.2

SOUTHWESTERN MONUMENTS

MONUMENTS	EMPLOYEES	FIELD TRIPS				MUSEUM TALKS				Unattended		Per cent contact
		Per. Temp.	No. Att'd	Time Att'd	Av. Time	No. Att'd	Time Att'd	Av. Time	Total Informational Contracts	Total Travel		
Arches	1	--	--	--	--	--	--	--	35	45	80	56
Aztec	2	--	134	737	4296	4.7	27.9	162	741	2963	4.5	167
Bendelier	1	CCC	45	232	2340	5.17	72.3	53	212	809	4.07	47.6
DeChelly	1	--	30	104	4475	3.4	143.0	--	--	--	--	39.7
Capulin	1	--	--	--	--	--	--	--	--	1100	--	1100
Casa Grande	2	--	235	2156	6301	3.1	37.4	134	1377	2933	2.9	142.0
Cuaco Canyon	1	--	43	112	2835	2.3	32.3	25	77	745	3.0	53.5
Chiricahua	1	CCC	70	399	2682	5.7	38.3	--	--	--	--	54.8
El Morro	1	--	37	173	2170	4.3	38.3	--	--	--	--	37.0
Cile Cliff	--	--	--	--	--	--	--	--	--	--	--	--
Great Guivira	1	--	53	198	3075	2.7	59.0	--	--	--	--	220
Hovenweep	1	--	--	--	--	--	--	--	--	--	--	--
Montezuma Castle	2	--	162	500	6633	3.0	40.9	124	363	1897	2.9	117.0
Natural Bridges	1	--	--	--	--	--	--	--	--	--	--	--
Navajo	2	--	19	34	2390	2.3	123.0	--	--	--	--	70
Organ Pipe	--	--	--	--	--	--	--	--	--	--	--	--
Pipe Spring	1	--	10	67	430	4.1	23.0	--	--	--	--	370
Rainbow Bridge	--	--	--	--	--	--	--	--	--	--	--	--
Saguaro	--	--	--	--	--	--	--	--	--	--	--	--
Sunset Crater	--	--	--	--	--	--	--	--	--	--	--	253
Tonto	--	--	--	--	--	--	--	--	--	--	--	250
Tumacacori	2	--	166	773	5722	4.3	34.4	--	--	--	--	801
Walnut Canyon	1	--	30	240	15.5	3.3	24.9	125	454	2350	2.6	841
White Sands	1	--	--	--	--	--	--	--	--	--	--	3643
Wupatki	1	--	19	51	695	2.6	36.5	16	44	314	2.7	85
Yucca House	--	--	--	--	--	--	--	--	--	--	--	--
TOTAL	23	5	1114	5836	49039	5.2	44.0	658	3270	12016	4.9	17412
September, 1937	19	7	1000	3071	77034	5.3	43.5	1019	5365	10696	5.2	14326
October, 1936	12	11	1348	6184	52661	4.5	39.0	997	4713	16757	4.7	14869

VISITOR STATISTICS (CONT.)

persons to the trip and the trips averaged 44.0 minutes each. Last year the parties averaged 4.5 persons each and the trip time was 39.0 minutes.

The small number of the average party is a very satisfying thing to us because it allows what we consider a very much better contact. Instead of the "platform manner", if I may call it that, which one is forced to use with a crowd, we can use the common conversational way of talking, can let the visitor raise questions, and can expand any point which seems interesting to the particular party.

Casa Grande leads with the highest average field party of 8.1. There is a sharp drop to Bandelier and Chiricahua which are in the 5-6 class; then come Aztec, El Morro, Pipe Spring, and Tumacacori in the 4-5 class; de Chelly, Chaco, Gran Quivira, Montezuma Castle, and Walnut Canyon in the 3-4 class; and Wupatki and Navajo averaging below 3 persons per party. Several factors help determine the number of persons in the average party: Casa Grande being so high because of peak loads on holidays, daily peaking of the load at certain hours, and lack of personnel. The average party being 8.1 means Al. and Don. handle frequent parties of 20 to 40 on Sundays and holidays.

We have seven museums reporting in October: Tom Onstott, being employed as road laborer, was unable to operate the little museum at Tonto.

We gave 658 museum talks to 3,270 museum visitors, averaging 4.9 persons to the talk and 18.2 minutes to the trip. This, as compared with 997 talks a year ago to 4,713 visitors in an average party of 4.7 staying 16.8 minutes, shows a drop this year in number of trips, a very slight rise in the size of party and a rise of 1.4 minutes in the length of the talk.

A couple of interesting indications are that Bandelier, where we have recently opened our museum, comes up from an average trip of 13.0 minutes last month to 15.57 minutes this month, and Wupatki, where David Jones has recently started museum talks, comes up from 15.6 minutes last month to 19.6 minutes this month. The Bandelier museum is very incomplete as yet and David has only a hat full of material, yet they are holding the interest of the visitors a little above the average of 18.2 minutes of all the museums.

A FEW FACTS ABOUT 114,000 VISITOR CONTACTS

In the visitor year running from October 1, 1936 to September 30, 1937, the Southwestern Monuments had a total of 291,426 visitors.

With this number of visitors we made 153,912 informational contacts. This is a 52% contact and points clearly to the fact that we

VISITOR STATISTICS (CONT.)

are so undermanned that we cannot reach half our visitors. White Sands National Monument is our worst spot in this connection and we plan to get a man in there during the current year and, in some small part at least, improve the situation.

We have not as yet developed a clear cut definition of an informational contact. It is not a man on a checking station at the entrance of a park who is giving instructions to visitors, information as to hotels, campground facilities, etc. It is a case of where visitors come and ask, whether singly or in groups, for information as to how or why or when or where concerning the centers of interest in and around our national monuments and our man gives the information sought either by lectures or talks. Since our average contact party was made up of between five and six people, we like to think of our contacts as being talks and not lectures. Since they are, on the average, just talks between our man and five or six people, in which they all get well acquainted and pass information back and forth, our man getting as well as giving information, and the visitors giving and getting information from each other as well as from our man, we prefer to think of them as informational contacts rather than the more used phrase, "educational contacts". Education, to us, carries a somewhat more formal idea: textbooks,--hard work,--grinding and groaning, which we do not associate with this informal service of ours, so, although, in a strict sense, it is an educational service, we rather lean toward calling it an informational service.

This informational service of ours was broken up into 16,533 field trips and 9,574 museum talks, a total of 26,107 units of service, the field trips averaging 44.3 minutes each and the museum talks 18.1 minutes each. The field trip service was used by 98,929 persons and the museum talks were attended by 54,437 persons. So far as this service extended, it was excellent, but, as we have pointed out, only half our visitors had a chance to use it because we could not put personnel at the points where half the visitors went and wanted information.

We are prepared to show that the point of saturation on a field trip at one of our monuments where we now have personnel is pretty close to 100%. There will be a few cases of elderly persons who cannot walk, heart cases who feel the altitude, repeaters who have made the trip and are willing to turn their friends over to the guide, etc., which will keep us from ever making a perfect record, but we can point to Aztec Ruins National Monument where, out of 14,303 visitors, 12,820 took the guided field trip. That is an 89% score out of a possible 100%. Out of these 14,303 persons, 13,750 attended the museum talks, a 96% score out of a possible 100%. These figures cover 4,135 units of service, 14,303 persons and a year of time, so sharp fluctuations due to weather, individual parties, spurts of energy on the part of our personnel, etc. are ironed out, and the figures show, beyond any

VISITOR STATISTICS (CONT.)

question of a doubt, that the public wants the type of service we deliver.

In my own mind, I am sure that at our points of historic or pre-historic interest where we deliver two units of service, a field trip and a museum trip, to not exceeding 7,500 visitors per annum per employee, we should expect to get about 180% contact out of the possible 200%. If we do not get this, we should look for the local factor or factors which are causing the trouble. In the case cited above, Aztec, we have 7,131 visitors per employee per annum, level ground for the field trip, not too long a trip, and we get 185% contact out of a possible 200%. At Walnut Canyon we have 7,598 visitors per employee per annum and get a 74% contact out of a possible 200%. The reason for this low record is that we have only one man on duty; the long distance between the field trip and the museum; the employee must have his time out for lunch, for going after mail and supplies, etc., all of which means that wherever he is working he is missing visitors at the other end of the line. We can see the trouble and we know that the answer is a second employee, but we cannot solve the problem because of financial reasons. At Montezuma Castle, with two employees, with 9,496 visitors we get 147% contact out of a possible 200%. The local factors are: the climb up eighty feet of ladders stops a heavy per cent of visitors who grow dizzy on high places, the aged, or those having heart trouble. These factors are beyond our reach so we must figure a certain amount of handicap in our contact total at the Castle.

At Casa Grande, $2\frac{1}{2}$ employees with 33,661 visitors reached only 159% out of a possible 200% contact. Here we are quite clearly undermanned because instead of asking our employees to handle 7,500 visitors each per annum, we are asking them to handle 13,434 visitors each per annum. This is probably the major factor but there are several minor factors entering into the problems at Casa Grande. At Tonto one man had 5368 visitors, which in itself is not too large a number, but, with a stiff climb to the ruins and the time he has to be absent from the job, he is cut down to 122% of a possible 200% contact. Chaco Canyon had 7,940 visitors for 1 $\frac{1}{3}$ employees, but a long field trip and a scattering of interest in the summer when the summer school of archeology is working in the Canyon will account in large part for the 71% of contact out of a possible 200%.

SIX MUSEUM MONUMENTS

Running up six of our monuments where we have been operating museums, Aztec, Casa Grande, Chaco Canyon, Montezuma Castle, Tonto, and Walnut, for the visitor year October 1, 1936, to September 30, 1937, we find that we have had 80,573 visitors with whom we have made 114,088 contacts, or 141% out of a possible 200% contact. At these

VISITOR STATISTICS ON SIX MUSEUM MONUMENTS, OCTOBER 1, 1936, to SEPTEMBER 30, 1937.

MONUMENT	FIELD TRIPS					MUSEUM TRIPS					Total			Per-		
	No.	Persons	Total Time	Av. Party	Av. Trip Time	No. Trips	Person Time	Av. Party	Av. Trip Time	Information	Total	Person	Cent	Per-	Cent	Per-
Aztec	2049	12,820	81,184	6.2	39.6	2046	13765	39655	6.5	19.0	26575	14303	185%			
Casa Grande	3863	51,163	119,451	8.0	30.9	2910	22568	36666	7.7	19.4	56751	30651	159%			
Chaco Canyon	598	3,031	48,280	5.0	80.7	529	2023	13004	4.9	22.6	5044	7940	71%			
Montezuma Castle	1885	7,323	63,742	3.8	33.2	1711	6731	21455	3.9	18.3	12937	9496	147%			
Pinto	950	3,493	45,218	3.3	47.7	851	3060	11819	5.5	13.8	6553	5368	122%			
Walnut	645	3,620	10,795	5.6	16.7	1001	3978	20380	3.9	20.0	7533	9607	74%			
TOTALS	9990	61,353	367,750	5.8	36.8	9088	52735	171979	5.8	18.9	114068	80575	141%			
Total All South-western Monuments	16533	93,323	733,331	5.9	44.3	1574	54437	173228	5.6	18.1	152912	291426	52%			

SIX MUSEUM MONUMENTS (CONT.)

At these six monuments, we gave a total of 19,078 units of service consisting of 9,990 field trips and 9,088 museum talks. This, when you stop to think it over, is a lot of service, and, since we are going to have three or four more museums working before the end of the current year, it behooves us to look into the figures on these six monuments and see what a visitor does on a field trip and in a museum.

We took 61,353 visitors on 9,990 field trips. The average party was made up of 5.8 persons and the average time was 36.8 minutes. This means that our guides are not putting on a platform lecture to a house full of people, but that our talks can be very informal and personal. We can find what the particular visitor knows about our monument and then shape our talk to fit that knowledge. I can hardly overemphasize the value of this type of informational contact. It is far more valuable from the standpoint of the visitor who can get his individual questions answered instead of having to depend on a shotgun type of lecture covering the things he wants to know.

We have never been able to figure the actual time devoted to information on a field trip. The total time of the trip will of course depend on the amount of walking to be done as well as upon the amount of information to be given. Chaco Canyon leads with 80.7 minutes for its average trip time, Tonto comes next with 47.7 minutes, Aztec third with 39.6, Montezuma Castle follows with 33.2, Casa Grande is fifth with 30.9 and Walnut Canyon last with 16.7 minutes. Chaco Canyon has a long trail with a lot to talk about. Tonto has a long trail up hill, a fairly short trip through the ruins and a pleasant walk back down the trail. It must be remembered that the time used in going to and from the ruins can be packed full of information about desert growth, flora and fauna, and so the whole elapsed time is fairly counted as an informational contact. Aztec is an average example of a field trip among the Southwestern Monuments; it is not a long walk; it is on level ground so that anybody can take it; it is full of interest enough to cause repeating by local persons; and visitors can be handled so the guide need not hurry his trip too much in order to reach the next party. The climb into Montezuma Castle cuts down the percentage of contacts ~~but~~ probably extends the time of the contact. At Casa Grande, there are enough peak loads to cause a slight shortening of the trip in order to handle the situation. I feel sure that with more help we could lengthen the trip to the additional pleasure of the visitor. At Walnut I think the time is shortened by the many parties who will not make the trip down the trail to the ruins but have the guide stand on the rim and tell them about it. If all parties would make the complete trip, the trip time would be lengthened, but that desirable end will never be attained because of the aged, the heart cases, the altitude, and because of the desire to cover more distance per day on the part of the tourist.

Of the 80,575 persons with whom we are dealing as visitors to

SIX MUSEUM MONUMENTS (CONT.)

these six monuments, 52,735 went through the museums in the 9,088 guided trips which were given.

The averaged number of persons per trip was 5.8. This is precisely the same as the average number in the field party, although at no individual monument were the average field and museum party the same.

The average time of the museum trip for the 9,088 museum trips through the six museums was 18.9 minutes. The time varies as widely as from 15.8 minutes on 251 trips at Tonto to 22.3 minutes at Chaco Canyon on 529 trips. Both these monuments have comparatively small collections. At Aztec and Casa Grande, where we have our largest collections of artifacts and have expended our largest amounts of time and money in arranging them, we averaged 19.0 and 19.4 minutes per trip on 2,086 trips at Aztec and 2,910 trips at Casa Grande.

As I scan visitors statistics month after month, I become more and more certain in my own mind that the individual guide has more to do with the fluctuations of museum trip time than either size of collection or expensive display. This statement is not meant to be an off hand criticism of the guide who happens to have a low museum trip average time. Several factors enter into the average time and over some of them the guide may not have control. On peak days and peak loads, he may have to speed up his museum trip whether or not he wishes to do so. His monument might be so located that the visitors lose interest early in the afternoon and speed themselves up in order to reach food and shelter for the night. Many factors can enter and we must not make hasty decisions.

In order to give the visitor more information, we must gather and digest more and more information about him. I grant this is a slow and time-consuming business; that the figures we gather are not precise; that we work up blind alleys now and again and come out without results; but gradually, over a period of years, we may find out what a visitor does and why he does it and I submit that will be a more important result than can be obtained from quite a lot of the statistics we gather.

*****O*****

CLOSING

By the Boss.

Before you get this far in reading this report, Chief, you will see that we have had a pretty good month; nothing to brag about, nothing especially outstanding; just a good run-of-the-mill month.

This is our between-season month; the northern monuments having passed the peak of their year are on their way down to the quiet winter period. The southern monuments not yet having reached their

CLOSING (CONT.)

peak are on the way up to their top which will occur next February and March.

The only real fly in the ointment of October was the financial situation. After guessing our way through July, August, and September, we finally got our books set up and got to look the situation in the face about the first of October. Since then we have been trying to put the puzzle together so it will make some sort of sense. For instance, when we had encumbered the headquarters salaries for the rest of this fiscal year, we had enough money left to pay the telephone, telegraph, and freight bills, but nothing for anybody to travel on and nothing for any kind of incidental expenses. At several of our monuments when we encumbered the salaries for the remainder of the year, there was not enough left to keep a car going until next July and provide light and heat in the Government owned buildings.

I am not kicking: I am just pointing out that when I say we are going to have hard sledding for the remainder of this fiscal year, I mean we are poverty stricken in a poor man's sense of the term. We won't be able to stave off depreciation; we cannot keep our buildings up; our motor equipment may have to get in bad shape. A ten per cent impoundment of funds to balance the budget seems so small when one talks about it that one is appalled by the reaction one gets when it really happens. It is somewhat like a man's making a saving of ten per cent on his automobile operation by not buying any oil. This ten per cent is taking the oil out of our bearings and we are having a whale of a time finding a substitute.

All permanent men will have to do without temporary rangers next spring; this is a foregone conclusion and it is going to hurt the quality of our service to the public, say, there's the rub! We, ourselves, can take it if need be, but we hate to pass it on to the public. We also plan to stretch vacancies, when they occur, just as far as possible, but we can't carry that too far without doing injustice to the men who are absorbing the work of the vacant position.

I am glad to report that our morale seems to be holding all right. There might be a tendency, when looking down eight or nine months of futile fighting to hold things together without making any progress, for the morale to weaken, but it hasn't shown up yet in our organization. One man wrote in that if the Southwestern Monuments need the money, to go on and furlough everybody two or three weeks and let them work without pay; another, a temporary man, refuses two weeks leave due him before he quits and goes on working the time out on a job we cannot hire some one else to do because of lack of funds. Another temporary blows me up because I send word that we can't do certain work we had planned for the Thanksgiving holidays because of lack of funds; the

CLOSING (CONT.)

work needs to be done doesn't it; and the temporary will just come up and visit that week and do it. No there's nothing the matter with the morale, at least up to the present.

Cordially,

Frank Pinkley

Frank Pinkley,
Superintendent.

THE Supplement

S·M·

MONTHLY REPORT

THE SUPPLEMENT



THE UNIVERSITY OF CHICAGO

T H E C O V E R

Our new cover which appears for the first time with this issue was not printed at government expense but was donated to the Southwestern Monuments by friends of the organization.

HERBARIUM AT NAVAJO

By Milton Wetherill,
ranger in charge

The following herbarium specimens, now housed at Kayenta, Arizona, until government buildings are constructed at Navajo National Monument, were collected by John and Milton Wetherill.

Numbered plants were identified by the U. S. Department of Agriculture, Sacaton, Arizona. Mr. Jack Whitehead, Boyce Thompson Arboretum, Superior, Arizona, very kindly checked our typed list before publication.

1. *Oryzopsis hymenioides*. Wild Rice
2. *Streptanthus cordatus*
3. *Odostemon repens*. Oregon Grape
4. *Artemisia* sp. Sage
5. *Senecio* sp. Groundsel
6. *Lepargyrea rotundifolia*. Silver Scale
7. *Poa Fenderiana*. Blue grass
8. *Populus* sp. Cottonwood
9. *Ephedra viridis*. Mormon Tea
10. *Ephedra viridis*. Mormon Tea
11. *Acer negundo*. Boxelder
12. *Abronia elliptica*. Sand Verbena
13. *Cryptanthe barbigera*
14. *Poa longiligula*. Blue grass
15. *Poa longiligula*. Blue grass
16. *Erodium cicutarium*. Storksbill
17. *Erodium cicutarium*. Storksbill
18. *Erodium cicutarium*. Storksbill
19. *Sphaeralcea parofolia*. Globe Mallow: (Probably meant to
20. *Sphaeralcea parofolia*. Globe Mallow: be *malva parviflora*--J.W.)
21. Boraginaceae. Borage Family
22. *Cardamine* sp. Blistercress
23. *Streptanthus cordatus*
24. *Rhus trilobata*. Skunkbrush
25. *Astragalus amphioxys brachylobus*. Loco
26. *Astragalus amphioxys brachylobus*. Loco
27. *Rhus trilobata*. Skunkbrush
28. *Poa fendleriana*. Blue grass
29. *Poa longiligula*. Blue grass
30. *Poa longiligula*. Blue grass
31. *Lycium pallidum*. Desert Thorn
32. *Tradescantia occidentalis*. Spiderwort
33. *Sphaeralcea parofolia*. Globe Mallow (*Malva parviflora*. J.W.)
34. *Arabis* sp. Rock Cress
35. *Erigeron* sp. Fleabane
36. *Androsace septentrionalis*
37. *Prunus* sp. Chokecherry
38. *Prunus* sp. Chokecherry

39. *Symphoricarpos rotundifolius*. Snowberry
40. *Erodium cicutarium*. Störksbill
41. *Cornus stolonifera*. Dogwood
42. *Cornus stolonifera*. Dogwood
43. *Senecio* sp. Groundsel
44. *Erigeron* sp. Fleabane
45. *Gaillardia* sp. Blanket Flower
46. *Gaillardia* sp. Blanket Flower
47. *Actinella* sp.
48. *Oenothera pallida*. Evening Primrose
49. *Pentstemon Eatonii*
50. *Pentstemon Eatonii*
51. *Gilia aggregata*. Scarlet Gilia
52. *Pentstemon Eatonii*
53. *Pentstemon Eatonii*
54. *Amelanchier mormonica*. Service Berry
55. *Delphinium scaposum*. Larkspur
56. *Streptanthus cordatus*
57. *Gilia aggregata*. Scarlet Gilia
58. *Fendlera rupicola falcata*. Fendlerbush
59. *Abronia elliptica*. Sand Verbena
60. *Cryptanthe Jamesii*
61. *Delphinium scaposum*. Larkspur
62. *Cryptanthe Jamesii*
63. *Vagneria stellata*. False Solomon Seal
64. *Cornus instolonea*. Dogwood
65. *Linum Lewisii*. Prairie Flax
66. *Plantago spinulosa oblonga*. Plantain
67. *Sphaeralcia parofolia*. Globe Mallow
68. *Thlaspi Fendleri*. Pennycress
69. *Plantago Purshii*. Plantain
70. *Gilia aggregata*. Scarlet Gilia
71. *Lycium pallidum*. Desert Thorn
72. *Delphinium scaposum*. Larkspur
73. *Lathyrus eucosmus*. Wild Sweet Pea (This I cannot find;
it may be meant for *L. incanus*.--J. W.)
74. *Salix lasiandra*. Willow
75. *Prunus* sp. Chokecherry
76. *Prunus* sp. Chokecherry
77. *Symphoricarpos rotundifolius*. Snowberry
78. *Valeriana acutiloba*. Valetian
79. *Tradescantia occidentalis*. Spiderwort
80. *Lepidium georginum*. Pepper Grass
81. *Lepidium alyssoides*. Pepper Grass
82. *Artemisia* sp. Sage
83. *Alsine media*. Chickweed
84. *Juniperus communis sibirica*. Ground Juniper
85. *Arctostaphylos pungens*. Manzanita
86. *Frasera* sp. Elkweed

HERBARIUM AT NAVAJO (CONT.)

87. *Astragalus oxytropis*. Loco
88. *Orobanche fasciculata*. Broom Rape
89. *Abronia* sp. Sand Verbena
90. *Perezia* sp. Indian Cotton
91. *Artemisia* sp. Sage
92. *Oenothera lavandulaefolia glandulosa*. Evening Primrose
93. *Sphaeralcea parvifolia*. Globe Mallow (See numbers 19-20-33)
94. *Dithyrea wislizeni*. Spectacle Pod
95. *Arabis* sp. Rockcress
96. *Oryzopsis hymenoides*. Indian Rice (Ricegrass)
97. *Perezia* sp. Indian Cotton
98. *Delphinium scaposum*. Larkspur
99. *Lesquerella* sp. Bladderpod
100. *Lesquerella* sp. Bladderpod
101. *Petrophytum caespitosum*
102. *Lithophragma australe*. Woodland Star
103. *Cowania stansburiana*. Cliff Rose
104. *Odostemon repens*. Oregon Grape
105. *Petrophytum caespitosum*
106. *Petrophytum caespitosum*
107. *Chamaesaracha coronopus*
108. *Delphinium scaposum*. Larkspur
109. *Poliomintha incana*
110. *Arctostaphylos pungens*. Manzanita
111. *Mirabilis* sp. Four-o'clock
112. *Pinus edulis*. Pinyon
113. *Baileya* sp. Desert Marigold
114. *Thalictrum* sp. Meadow Rue
115. *Descurainia*
116. *Ribes cereum*. Wild Currant
117. *Baileya* sp.
118. *Eriophyllum* sp.
119. *Atriplex* sp. Salt Brush
120. *Apiaceae* sp.
121. *Aster* sp.
122. *Aster* sp.
123. *Townsendia* sp.
124. *Cleome lutea*. Yellow Bee Plant
125. *Poliomintha incana*
126. *Sphaeralcea parvifolia*. Globe Mallow (See numbers 19-20-33)
127. *Hookers pauciflora*. Clusterlily
128. *Calliandra eriophylla*
129. *Solanum Jamesii*. Nightshade
130. *Plantago purshii*. Plantain
131. *Oenothera lavandulaefolia*. Evening Primrose
132. *Oenothera lavandulaefolia*. Evening Primrose
133. *Astragalus* sp. Loco
134. *Phacelia heterophylla*
135. *Psilostrophe* sp.

HERBARIUM AT NAVAJO (CONT.)

136. *Vagneria stellata*. False Solomon Seal
137. *Cornus stolonifera*. Dogwood
138. *Perezia* sp.
139. *Frasera* sp. Elkweed
140. *Equisetum* sp. Horsetail
141. *Frasera* sp. Elkweed
142. *Vagneria stellata*. False Solomon Seal
143. *Robinia neo-mexicana*. Locust
144. *Descurainia* sp.
145. *Lesquerella* sp. Bladderpod
146. *Artemisia* sp. Sage
147. *Astragalus longifolius*. Loco
148. *Abronia* sp. Sand Verbena
149. *Psilostrophe* sp.
150. *Heuchera rubescens*. Alum Root
151. *Asclepiodora decumbens*
152. *Solanum Jamesii*. Nightshade
153. *Cornus stolonifera*. Dogwood
154. *Frasera* sp. Elkweed
155. *Vagneria stellata*. False Solomon Seal
156. *Perezia* sp.
157. *Aster* sp.
158. *Oxytropis sericea*. Loco
159. *Melilotus indica*. Sweet Clover
160. *Melilotus indica*. Sweet Clover
161. *Symphoricarpos rotundifolius*. Snowberry
162. *Fendlera rupicola falcata*. Fendlerbush
163. *Aster* sp.
164. *Melilotus indica*. Sweet Clover
165. *Achillea* sp. Yarrow
166. *Pachistima myrsinites*. Mountain Laurel
167. *Symphoricarpos rotundifolius*. Snowberry
168. *Fendlera rupicola falcata*. Fendlerbush
169. *Symphoricarpos rotundifolius*. Snowberry
170. *Symphoricarpos rotundifolius*. Snowberry
171. *Fendlera rupicola falcata*. Fendlerbush
172. *Tradescantia occidentalis*. Spiderwort
173. *Abronia elliptica*. Sand Verbena
174. *Lupinus* (see L. Palmeri) Lupine
175. *Hymenopappus* sp.
176. *Eriogonum* sp.
177. Silverwort
178. *Zygadenus* sp. Death Camas
179. *Asclepiodora decumbens*. Milkweed
180. *Asclepiodora decumbens*. Milkweed
181. *Phorodendron* sp. Mistletoe
182. *Adiantum* sp. Maidenhair Fern
183. *Tradescantia occidentalis*. Spiderwort
184. *Cryptantha* sp.

HERBARIUM AT HAVAJO (CONT.)

- 185. *Cleome lutea*. Yellow Bee Plant
- 186. *Lepargyrea rotundifolia*. Silver Scale
- 187. *Fritillaria atropurpurea*. Bronze Lily
- 188. *Oenothera contorta*. Evening Primrose
- 189. *Zygadenus* sp. Death Camas
- 190. *Serapias gigantea*. Orchid
- 191. *Adiantum* sp. Maidenhair Fern
- 192. *Lepidium alyssoides*. Peppergrass
- 193. *Aster* sp.
- 194. *Lathyrus eucosmus*. Wild Sweet Pea
- 195. *Eriogonum ovalifolium*
- 196. *Calochortus* sp. Mariposa Lily
- 197. *Calochortus* sp. Mariposa Lily
- 198. *Aquilegia flavescens*. Columbine
- 199. *Lepargyrea rotundifolia*. Silver Scale
- 200. *Lappula* sp. Stickseed
- 201. *Ribes aureum*. Wild Currant
- 202. *Bromus* sp. Brome
- 203. *Bromus* sp. Brome
- 204. *Bromus* sp. Brome
- 205. *Bromus* sp. Brome
- 206. *Festuca octoflora*. Fescue
- 207. *Artemisia* sp. Sage
- 208. *Stachys* sp. Hedge Nettle
- 209. *Oenothera pallida*. Evening Primrose
- 210. *Abronia* sp. Sand Verbena
- 211. *Thalictrum* sp. Meadow Rue
- 212. *Leontodon taraxacum*. Dandelion
- 213. *Comandra pallida*. False Toad Flax
- 214. *Lappula* sp. Beggar's Lice
- 215. *Arabis* sp. Rockcress
- 216. *Artemisia* sp. Sage
- 217. *Abronia* sp. Sand Verbena
- 218. *Achillea* sp. Yarrow
- 219. *Delphinium amabile*. Larkspur
- 220. *Clematis ligusticifolia*
- 221. *Ephedra viridis*. Mormon Tea
- 222. *Prunus* sp. Chokecherry
- 223. *Funastrum lineare*
- 224. *Alopecurus aequalis*. Foxtail
- 225. *Poa Fenderiana*. Bluegrass
- 226. *Descurainia* sp.
- 227. *Arabis* sp. Rockcress
- 228. *Descurainia* sp.
- 229. *Valeriana arizonica*. Valerian
- 230. *Arabis* sp. Rockcress
- 231. *Lepargyrea rotundifolia*. Silver Scale
- 232. *Purshia tridentata*. Antelope Bush
- 233. *Astragalus* sp. Loco

HERBARIUM AT NAVAJO (CONT.)

- 234. *Cornus instolonea*. Dogwood
- 235. *Ribes longiflorum*. Yellow Currant
- 236. *Odostemon repens*. Oregon Grape
- 237. *Sphaeralcea parofolia*. Globe Mallow (See numbers 19-20-33)
- 238. *Tradescantia occidentalis*. Spiderwort
- 239. *Tradescantia occidentalis*. Spiderwort
- 240. *Capnoides aureum*. *Corydalis*
- 241. *Funastrum lineare heterophyllum*
- 242. *Polemonium pulcherrimum delicatum*. Polemonium
- 243. *Pinus monophylla*. Pinyon
- 244. *Achillea* sp. Yarrow
- 245. *Nicotiana glauca*. Tree Tobacco
- 246. *Nicotiana glauca*. Tree Tobacco
- 247. *Senecio* sp. Groundsel
- 248. *Cornus stolonifera*. Dogwood, Cornel, Red-osier
- 249. *Juniperus communis sibirica*. Ground Juniper
- 250. *Juniperus communis sibirica*. Ground Juniper
- 251. *Allium deserticola*. Wild Onion
- 252. *Artemisia* sp. Sage
- 253. *Delphinium* sp. Larkspur
- 254. *Gilia subnuda*
- 255. *Odostemon repens*. Oregon Grape
- 256. *Poa* sp. Bluegrass
- 257. *Humulus lupulus*. Hop
- 258. *Astragalus sesquiflorus*. Loco
- 259. *Odostemon repens*. Oregon Grape
- 260. *Odostemon repens*. Oregon Grape
- 261. *Cheirinia elata*. Blister Cress
- 262. *Cheirinia elata*. Blister Cress
- 263. *Cornus stolonifera*. Dogwood, Cornel, Red-osier
- 264. *Gilia subnuda*
- 265. *Artemisia* sp. Sage
- 266. *Artemisia* sp. Sage
- 267. *Arctostaphylos pungens*. Manzanita
- 268. --
- 269. *Juniperus communis sibirica*. Ground Juniper
- 270. *Polemonium pulcherrimum delicatum*. Polemonium
- 271. *Heuchera rubescens*. Alum Root
- 272. --
- 273. *Pentstemon barbatus torreyi*
- 274. *Astragalus* sp. Loco
- 275. *Nicotiana trigonophylla*. Tobacco
- 276. *Pedicularis centranthera*. Wood Betony
- 277. *Perezia* sp.
- 278. --
- 279. --
- 280. *Fallugia paradoxa*. Apache Plume
- 281. *Perezia* sp.
- 282. *Delphinium* sp. Larkspur

HERBARIUM AT NAVAJO (CONT.)

- 283. *Thelesperma* sp.
- 284. *Orobanche fasciculata* lutea. Broomrape
- 285. *Astragalus* sp. Loco
- 286. *Antennaria*. Pussytoes
- 287. *Alsine Jamesiana*. Chickweed
- 288. *Cordylanthus*
- 289. *Fritillaria atropurpurea*. Bronze Lily
- 290. *Eriogonum cognatum*
- 291. *Fallugia paradoxa*. Apache Plume
- 292. *Lithophragma* sp. Woodland Star
- 293. *Pentstemon strictus*
- 294. *Antennaria* sp. Pussytoes
- 295. *Solanaceae*. Potato Family
- 296. --
- 297. *Descarainia menziesii*. Tansy Mustard
- 298. *Phlox austromontana*
- 299. *Traxinus anomala*. Singleleaf Ash
- 300. *Sophora stenophylla*
- 301. *Pentstemon* sp.
- 302. *Yucca baccata*
- 303. *Echinocereus* sp. Strawberry Cactus
- 304. *Echinocereus* sp.
- 305. *Opuntia* sp. Prickly Pear
- 306. *Opuntia* sp.
- 307. *Opuntia* sp.
- 308. *Opuntia* sp.
- 309. *Opuntia* sp.
- 310. *Opuntia* sp. Cholla
- 311. *Opuntia* sp. Prickly Pear
- 312. *Opuntia* sp.
- 313. *Opuntia* sp.
- 314. *Opuntia* sp.
- 315. *Opuntia* sp.
- 316. *Hymenopappus*
- 317. *Tradescantia occidentalis*. Spiderwort
- 318. *Lycium pallidum*
- 319. --
- 320. *Castilleja*. Indian Paint brush
- 321. *Heuchera parvifolia*. Alum Root
- 322. *Cryptantha* sp.
- 323. *Phacelia* sp.
- 324. *Arabis* sp. Rock Cress
- 325. *Chekinia elata*. Blister Cress
- 326. *Fritillaria atropurpurea*. Bronze Lily
- 327. *Androstaphium breviflorum*
- 328. --
- 329. --
- 330. *Arabis* sp. Rock Cress
- 331. *Townsendia* sp.

HERBARIUM AT NAVAJO (CONT.)

- 332. *Achillea* sp. Yarrow
- 333. *Cryptanthe*
- 334. *Lappula* sp. Beggar's Lice
- 335. *Descurainia longipedicellata*
- 336. *Descurainia longipedicellata*
- 337. *Descurainia longipedicellata*
- 338. *Thlaspi fendleri*. Penny Cress
- 339. *Sedum* sp. Stone Crop
- 340. *Astragalus amphioxys*. Loco
- 341. --
- 342. *Leontodon taraxacum*. Dandelion
- 343. *Astragalus* sp. Loco
- 344. *Artemisia* sp. Sage
- 345. *Oenothera caespitosa*. Evening Primrose
- 346. *Salix* sp. Willow
- 347. *Astragalus* sp. Loco
- 348. *Descurainia longipedicellata*
- 349. *Arabis* sp. Rock Cress
- 350. *Arabis* sp. Rock Cress
- 351. *Cryptanthe confertifolia*
- 352. --
- 353. *Streptanthus cordatus*
- 354. *Psilostrophe*
- 355. *Thlaspi fendleri*. Penny Cress
- 356. *Thlaspi fendleri*
- 357. *Artemisia* sp. Sage
- 358. *Androsace septentrionalis diffusa*
- 359. *Gilia gracilis micrantha*
- 360. *Lappula Redowskii*. Beggar's Lice
- 361. *Cryptanthe Crassisipala*
- 362. --
- 363. *Lappula Redowskii*
- 364. *Antennaria* sp. Pussytoes
- 365. *Artemisia* sp. Sage
- 366. *Androsace septentrionalis diffusa*
- 367. *Vagnera stellata*. False Solomon Seal
- 368. *Cryptanthe confertiflora*
- 369. *Actinea* sp.
- 370. *Oenothera pallida*. Evening Primrose
- 371. *Leontodon taraxacum*. Dandelion
- 372. *Abronia elliptica*. Sand Verbena
- 373. *Vagnera stellata*. False Solomon Seal
- 374. *Fendlera rupicola*
- 375. *Abronia elliptica*
- 376. *Actinea* sp.
- 377. --
- 378. *Townsendia* sp.
- 379. *Thlaspi fendleri*. Penny Cress
- 380. --

381. *Astragalus* sp. Loco
382. *Streptanthus cordatus*
383. --
384. *Geranium atropurpureum*
385. *Pentstemon strictus*
386. *Pentstemon strictus*
387. --
388. *Clematis ligusticifolia*
389. *Gutierrezia* sp. Snakeweed
390. *Gutierrezia* sp.
391. *Gutierrezia* sp.
392. *Gutierrezia* sp.
393. *Asclepias speciosa*. Milkweed
394. *Lepidium* sp. Peppergrass
395. *Allionia linearis*
396. *Allionia linearis*
397. *Allionia linearis*
398. *Pinus edulis*. Pinyon
399. *Pseudotsuga taxifolia*. Douglas fir
400. *Clematis ligusticifolia*
401. *Lithospermum multiflorum*. Puccoon
402. *Pinus ponderosa scopulorum*. Yellow Pine
403. *Erigeron* sp. Fleabane
404. *Yucca angustissima*
405. *Erigeron* sp.
406. *Yucca baccata*
407. *Senecio* sp. Groundsel
408. *Cowania stansburiana*. Cliff Rose
409. *Psilostrophe* sp.
410. --
411. *Aplopappus* sp.
412. *Pentstemon strictus*
413. *Aquilegia flavescens*. Columbine
414. --
415. *Toxicodendron longipes*. Poison Ivy
416. *Hymenopappus* sp.
417. *Thalictrum fendleri*. Meadowrue
418. *Senecio* sp. Groundsel
419. *Chrysopsis* sp. Golden Aster
420. *Aquilegia flavescens*
421. *Atriplex canescens*. Salt Brush
422. *Leptodactylon* sp. Prickly Phlox
423. *Senecio* sp. Groundsel
424. *Heuchera parvifolia*. Alum Root
425. *Hymenopappus* sp.
426. *Lycium pallidum*
427. *Erigeron* sp. Fleabane
428. *Mentzelia gracilentia*. Blazing Star
429. *Calochortus aureus*. Yellow Mariposa Lily

HERBARIUM AT NAVAJO (CONT.)

430. *Rosa Neo-Mexicana*. Rose
431. *Orobanche fasciculata lutea*. Broom Rape
432. *Rosa Neo-Mexicana*
433. *Apocynum medium*. Dogbane
434. *Montzelia gracilentia vestchiana*. Blazing Star
435. *Pentstemon Torreyi*
436. *Scricotheca dumosa*. Rock Spirea
437. --
438. --
439. *Thalictrum* sp. Meadowrue
440. *Pseudotsuga taxifolia*. Douglas Fir
441. *Lappula* sp. Beggar's Lice
442. *Odostemon repens*. Oregon Grape
443 to 449 omitted.
450. *Lepargyrea rotundifolia*. Silver Scale
451. *Artemisia tridentata*. Sage
452. *Cercocarpus* sp. Mountain Mahogany
453. *Streptanthus cordatus intricatus*
454. *Bromus* sp. Bromegrass
455. --
456. *Decurainia* sp.
457. *Betula fontinalis*. Water Birch
458. *Festuca* sp. Fescue
459. *Odostemon repens*. Oregon Grape
460. *Odostemon repens*. Oregon Grape
461. *Ephedra viridis*. Mormon Tea.
462. *Corydalis capnoides aureum*
463. *Quercus utahensis*. Utah Oak.
464. *Eriogonum cernuum*
465. *Lesquerella* sp. Bladderpod
466. *Cordylanthus* sp.
467. *Arabis* sp. Rock Cress
468. *Streptanthus cordatus*
469. *Lathyrus lasiandra*. Wild Sweet Pea
470. --
471. --
472. *Androsace septentrionalis*
473. *Corydalis capnoides aureum*
474. *Actinea* sp.
475. *Cymopterus* sp.
476. *Thalictrum* sp. Meadowrue
477. *Cowania stansburiana*. Cliff Rose
478. *Fritillaria atropurpurea*. Bronze Lily
479. *Astragalus longifolius augustus*. Loco
480. *Silene menziesii*. Catchfly
481. *Cheilanthes fendleri*. Lipfern
482. *Opuntia* sp. Cholla
483. *Talinum brevifolium*
484. *Opuntia* sp. Prickly Pear

- 485. *Opuntia* sp. Cholla
- 486. *Colochortus aureus*. Yellow Mariposa Lily
- 487. *Eriogonum microthecum*
- 488. *Salsola pestifer*. Russian Thistle
- 489. *Ptiloria* sp.
- 490. *Helianthus* sp. Sunflower
- 491. *Artemisia* sp. Sage
- 492. *Cryptanthe Jamesii setosa*
- 493. *Symphoricarpos rotundifolius*. Snowberry
- 494. *Thalictrum fendleri Wrightii*. Meadowrue
- 495. *Senecio* sp. Groundsel
- 496. *Chrysothamnus* sp. Rabbit Brush
- 497. *Erigeron* sp. Fleabane
- 498. *Mentha penardi*. Mint
- 499. *Oenothera pallida*. Evening Primrose
- 500. *Habenaria sparsiflora*. Orchis (Orchid)
- 501. *Ranunculus cymbalaria*. Buttercup
- 502. *Eriogonum alatum*
- 503. *Comandra pallida*. False Toad Flax
- 504. *Mentha penardi*. Mint
- 505. *Gilia longiflora*
- 506. *Gaillardia* sp.
- 507. *Eriogonum alatum*
- 508. --
- 509. *Tripterocalyx wootoni*
- 510. *Epilobium adenocaulon*. willow Herb
- 511. *Artemisia* sp. Sage
- 512. *Tripterocalyx wootoni*
- 513. *Abronia elliptica*. Sand Verbena
- 514. *Astragalus longifolius*. Loco
- 515. *Agropyron* sp. Wheat Grass
- 516. *Sitanion* sp. Squirreltail
- 517. *Streptanthus cordatus*
- 518. *Stipa scribneri*. Needle Grass
- 519. *Oryzopsis hymenioides*. Wild Rice
- 520. *Poa fenderiana*. Blue Grass
- 521. *Poa fenderiana*. Blue Grass
- 522. *Polypogon* sp. Rabbitfoot Grass
- 523. *Juncus balticus*. Rush
- 524. *Bromus* sp. Brome Grass
- 525. *Equisetum* sp. Horsetail
- 526. *Equisetum* sp. Horsetail
- 527. *Polypogon* sp.
- 528. *Bromus*. Broome Grass
- 529. *Oryzopsis hymenioides*. Wild Rice
- 530. *Poa fenderiana*. Blue Grass
- 531. *Juncus balticus*. Rush
- 532. *Juncus longistylis*
- 533. *Stipa scribneri*. Needle Grass

HERBARIUM AT NAVAJO (CONT.)


534. *Poa fenderiana*. Blue Grass
535. *Boutelous* sp. Grama Grass
536. --
537. *Bromus* sp.
538. *Boutelona* sp.
539. *Sporobolus* sp. Dropseed.
540. *Bouteloua* sp.
541. *Bouteloua*
542. *Sporobolus*
543. *Bouteloua*
544-550. *Cymopterus fendleri*
 Pinus monticola. White Pine
 Picea Engelmannii. Engelmann Spruce
 Picea pungens. Blue Spruce
 Abies concolor. White Fir
 Abies lasiocarpa. Alpine Fir
 Juniperus scopulorum. Rocky Mountain Red Cedar
 Quercus Gambelii, Gamble Oak
 Populus tremuloides aurea. Aspen
 Arceuthobium divaricatum. Lesser Mistletoe
 Phoradendron juniperinum. Mistletoe
 Cleome serrulata. Rocky Mountain Bee Plant
 Chenopodium album. Lambsquarter

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TALUS UNIT NO. 1 AT CHACO

By Margaret S. Woods

Excavations have been continued this summer at the small house site located on a talus mound northwest of Chetro Ketl. This is the third complete season of excavations on Talus Unit #1 since Paul Walter, Jr., of the School of American Research started the work in 1933. At that time Mr. Walter excavated the entire eastern end of the mound in a short season of two weeks, exposing two small kivas and three small rooms. In the summers of 1934 and 1935, the excavations proceeded westward along the mound, uncovering a series of somewhat larger rooms and kivas.* In this season of 1937, we have very nearly completed the excavation of the site to the general ground level. Our aim for the present has been merely to expose the surface structure of the ruin. Next year we hope to go into the deeper levels.

Talus Unit #1 is laid out in  shape, roughly oriented east and west. Its most conspicuous feature is a very large and solid wall running north and south near the center of the ruin. It is reinforced by a great log laid lengthwise in the rubble core. Both side and end faces are present, and it is clear that the wall was not intended as a mere support or to be part of any room structure. Two theories have been advanced for its use, either or both of which seem plausible. Since it

*(M. S. Woods, Southwestern Monuments, August 1934 and August 1935)

dominates a view in all directions in the canyon to a considerable distance, it may have been intended as a watch tower. Again, it would have been in a very desirable position for use as a town crier's platform,-- a possible use borne out by the existence of town criers in certain modern pueblos.

West of the "watch tower" we have excavated four long rectangular rooms and one kiva. Two of the rooms are noteworthy. Number 18 contained an unusually large amount of broken but restorable pottery, and a large number of bone awls and fleshers. Number 19-b contained a number of logs lying on the floor surface in such a position as to indicate that they had been stacked there for storage and had not fallen from the roof. A badly disturbed burial was found associated with these logs. The skull lay near the end of one log with a fine black-on-white bowl containing a black-on-white animal effigy close by. A single bone awl was also present. The lower jaw was found elsewhere in the same room and a few other bones, possibly from the same skeleton, were scattered in the fill. The burial was by no means complete, and was scattered much as if disturbed by animals.

Kiva "F" was small, 15 feet in diameter, and had an offset to the south. It proved to have the very unusual and interesting feature of a double ventilator shaft. One shaft enters in the usual manner with a vertical shaft to the south outside the offset wall and a horizontal shaft from its base under the floor and altar to its opening between the altar and firepit. The second shaft runs out through the offset wall, directly above the other shaft, cuts through the vertical shaft of the other and has its vertical portion just southwest of the other, slightly off the main axis of the kiva. The altar was in almost perfect condition with a rectangular niche in its north face. Both altar and walls of Kiva "F" are thickly coated with plaster.

A small plaza separates Kivas "D" and "F". It is noteworthy for the square of hard plaster floor in the northeast corner. A shallow circular pit near its southwest corner is of a size to hold an upright supporting beam, and it seems possible that the floor may have been protected by a ramada. The evidence is not definite or conclusive but, such as it is, points to this conclusion.

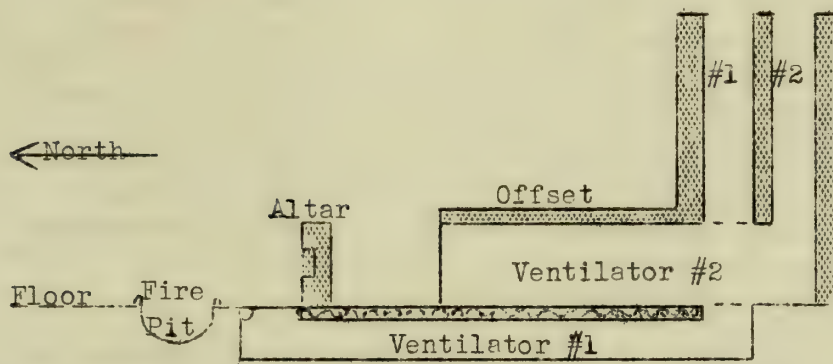
The remainder of the mound has been only shallowly excavated to expose the walls of what appears to be a second "keyhole" kiva adjacent to Kiva "F" on the west, and another pair of rooms west of the present excavated block of four rooms (#17 to #20). These will be excavated at the opening of the 1938 season.

See plate No. 1 for drawing of the double ventilator shaft.

TALUS UNIT NO. 1 AT CHACO (CONT.)

KIVA "F"

A - Vertical Section of Double Ventilator Shaft.



B - Horizontal Section of Double Ventilator Shaft.

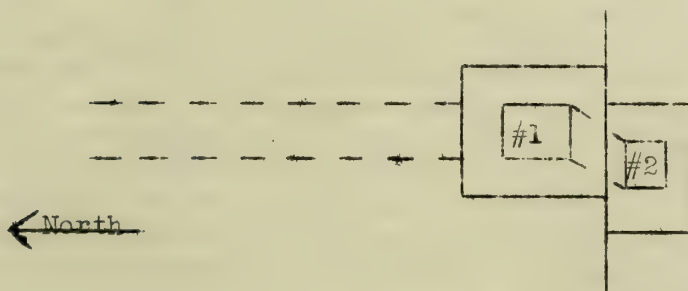


PLATE NO. 1

BIRDS AT MONTEZUMA CASTLE By Betty Jackson

A list of the birds seen on the monument in September follows:

Arizona Cardinal
Long-tailed Chat
Mourning Dove
House Finch
Red-shafted Flicker
Vermillion Flycatcher
Red-tailed Hawk
Pigeon Hawk (?)
Cooper Hawk
Desert Sparrow Hawk
Green Heron
Treganza Blue Heron
Rufous Hummingbird
Black-chinned Hummingbird

Killdeer
Belted Kingfisher
Screech Owl (Var.)
Black Phoebe
Gambel Quail
Western Sandpiper (?)
White-rumped Shrike
Crissal Thrasher
Canyon Towhee
Turkey Vulture
Grace Warbler
Cactus Woodpecker
Canyon Wren

Almost nightly since August 25 we have heard a screech owl. The Jennings saw him September 4, but were unable to see enough markings to identify the variety.

On September 2, a Crissal Thrasher and wife awoke us by hopping in the vines by our bedroom window and eating at the few berries left there by the mockingbirds. The screen made us invisible to them, apparently, so we watched them for quite a while.

I saw a Grace Warbler by the tent on the fourth.

Both male and female Cactus Woodpeckers have made themselves evident since September 6. Bailey does not mention it specifically in her "Birds of New Mexico", but I notice that the female has glossy black where the male has red on the head. On the seventh, Earl and I glanced up simultaneously to see the shape of a hawk swooping through the sycamores. We were able to see the coloring only on the tail but, from it and the general shape, we judge it to have been a Pigeon Hawk. However, we may be wrong. They have not been seen here before. It could possibly have been the Cooper Hawk, if we were wrong on wing shape. The day after, September 8, one dropped out of the trees swooping into the midst of the feeding quail. Jess Jennings saw him emerge from a mesquite soon after with a young quail he had captured. He has not caught any more to our knowledge although on the morning of the fifteenth I saw him dive among them and heard their squawks. He came out of the brush with no quail in his claws and no feathers in his mouth.

On September 10, a Canyon Towhee came close to us as Earl and I were sitting by the creek. It was the first opportunity either of us had ever had to see one at very close range. He seemed to consider us part of the scenery and was quite unselfconscious as he went about

BIRDS AT MONTEZUMA CASTLE (CONT.)

scratching in the dirt.

A little later that evening I saw another bird running along the edge of the water near a killdeer. I could see he was different, and ran for my glasses. When I got back the light had faded so much that I could only distinguish shades, not colors. I think he was a Western Sandpiper but, until I see him with more light, I can't be sure.

On September 15, a flock of birds appeared, lit on a sycamore, and then went off over the hill, all in about two minutes. The call was like a crow. The bird was ten to twelve inches long, mainly grey and black, the head light, with possibly a dark patch over the eye, and the bill was long and strong. They may have been Clark Nutcrackers, but it hardly seems reasonable at this altitude. There were thirty to fifty of them. Any ideas?

The Green Heron and Vermillion Flycatcher have not been seen for two weeks or so. They may or may not have left us. The White-winged Dove definitely has gone and so have the hummingbirds. I saw the Rufous Hummingbird last on the twelfth or thirteenth, several days after the black-chinned had left.

Jess saw a belted Kingfisher in the middle of the month, and Norman heard him again today.

The quail must total around sixty. The covey that stays close around here numbers between twenty and twenty-five, and there are two coveys that come over from across the creek each evening that count about twelve or fifteen each. The largest brood I have seen going with one set of parents is six. Most of them have five or less surviving.

BIRDS AT MONTEZUMA CASTLE (OCTOBER)

There have been twenty-four species of birds seen this month. There follows a list of them, with dates when seen.

Chestnut-Backed Bluebird	October 10 to present
Arizona Cardinal	All month
American Coot	September 29
Mourning Dove	All month
House Finch	All month
Red-shafted Flicker	All month
Cooper Hawk	To October 15
Sparrow Hawk	All month
Treganza Blue Heron	All month
Killdeer	All month
Belted Kingfisher (4)	October 8 to 15
Ashy Ruby-crowned Kinglets	October 11 to present

MONTEZUMA BIRDS (CONT.)

Red-breasted Mergansers (3)	October 3
Black Phoebe	September 29 and October 15. Probably all month.
Gambel Quail	All month
Red-naped Sapsucker	October 4 or 5 to present
Pine Siskin	September 12 (not surely identified), and October 34 (identified surely).
Western Chipping Sparrow	September 29 to present
Sparrow sp.	October 24
Crissal Thrasher	October 15 and 23
Vardin (?)	October 11
Turkey Vulture	All month
Cactus Woodpecker	All month
Gila Woodpecker	September 29 to present

Jane Jennings suggested today that I make a list of the foods we see the various birds eating. That seems a very worthwhile project, and I'm going to start on it right away. Maybe by the next report I'll have enough data to give a preliminary list.

She has noticed one thing already which I think is very interesting. The Cactus and Gila Woodpeckers and the Red-naped Sapsuckers spend a lot of time in the hackberries near the tent. But they don't seem to eat the berries. There are galls at the bases of a great many leaves, and the woodpeckers balance themselves on the twigs so their tails get behind the galls for support, then peck from the opposite side till they get in to the insects or larvae in the middle.

*****O*****

NAVAJO NATURE NOTES

By Milton Wetherill,
park ranger.

PLANTS COLLECTED AT BE-TA-TA-KIN FOR A NAVAJO INDIAN SING

Near Cow Springs, Arizona, August, 1937:

Douglas Fir	Meadow Rue
Chokecherry	Horsetail
Oregon Grape	

Collected West of Shanto:

Rocky Mountain Red Cedar	Gooseberry
Chokecherry	Douglas Fir

BIRDS SEEN AT BE-TA-TA-KIN IN AUGUST, 1937:

Sharp-shinned Hawk	White-throated Swift
SOUTHWESTERN MONUMENTS	326 SUPPLEMENT FOR OCTOBER, 1937.

BIRDS SEEN AT BE-TA-TA-KIN IN AUGUST, 1937 (CONT.)

Woodhouse Jay
Western Horned Owl
Turkey Vulture
Red-shafted Flicker
Pinyon Jay
White-breasted Woodpecker
Mountain Chickadee
Western Gnatcatcher
Lead-colored Bush-tit
Rocky Mountain Nuthatch
Western Robin
Cassin Vereo

Gray Titmouse
Western Red-tailed Hawk
Canyon Wren
American Raven
Long-crested Jay
Spurred Towhee
Long-tailed Chickadee
Western Tanager
Rock Wren
Broad-tailed Hummingbird
Western Mourning Dove

BIRDS SEEN AT BE-TA-TA-KIN IN SEPTEMBER, 1937

Sharp-shinned Hawk
Woodhouse Jay
Western Horned Owl
Red-shafted Flicker
Pinyon Jay
White-breasted Woodpecker
Mountain Chickadee
Lead-colored Bush-tit
Broad-tailed Hummingbird
Western Mourning Dove
Say Phoebe
Rocky Mountain Black-headed Grosbeak
Rock Wren

White-throated Swift
Gray Titmouse
Canyon Wren
American Raven
Long-crested Jay
Spurred Towhee
Western Tanager
Rocky Mountain Nuthatch
Western Robin
Pileolated Warbler
Cassin Vereo
Clark Nutcracker

At lake one mile west of Kayenta, Arizona, 22 Snowy Herons, Egretta thula brewsteri, were seen September 6, 1937.

*****O*****

WEATHER AT CASA GRANDE

By J. Donald Erskine,
park ranger.

A study of the weather statistics at the Casa Grande National Monument brings to light some interesting points which, when graphed, tell the story of our desert weather conditions through the year. The "normal" readings used in this report are obtained by using the 8 year normal as compiled several years ago, and combining the records of the last three years in our own files here at the monument. Thus our "normal" figures are obtained from 11 years of weather observation at the Casa Grande Ruins. Another point needing explanation is that this study is based on the period from October 1, 1936 to October 1, 1937, so the monthly figures used as current will be for the last three months of 1936 and the first nine months of 1937.

Dealing first with temperatures, a study of the graph shows that

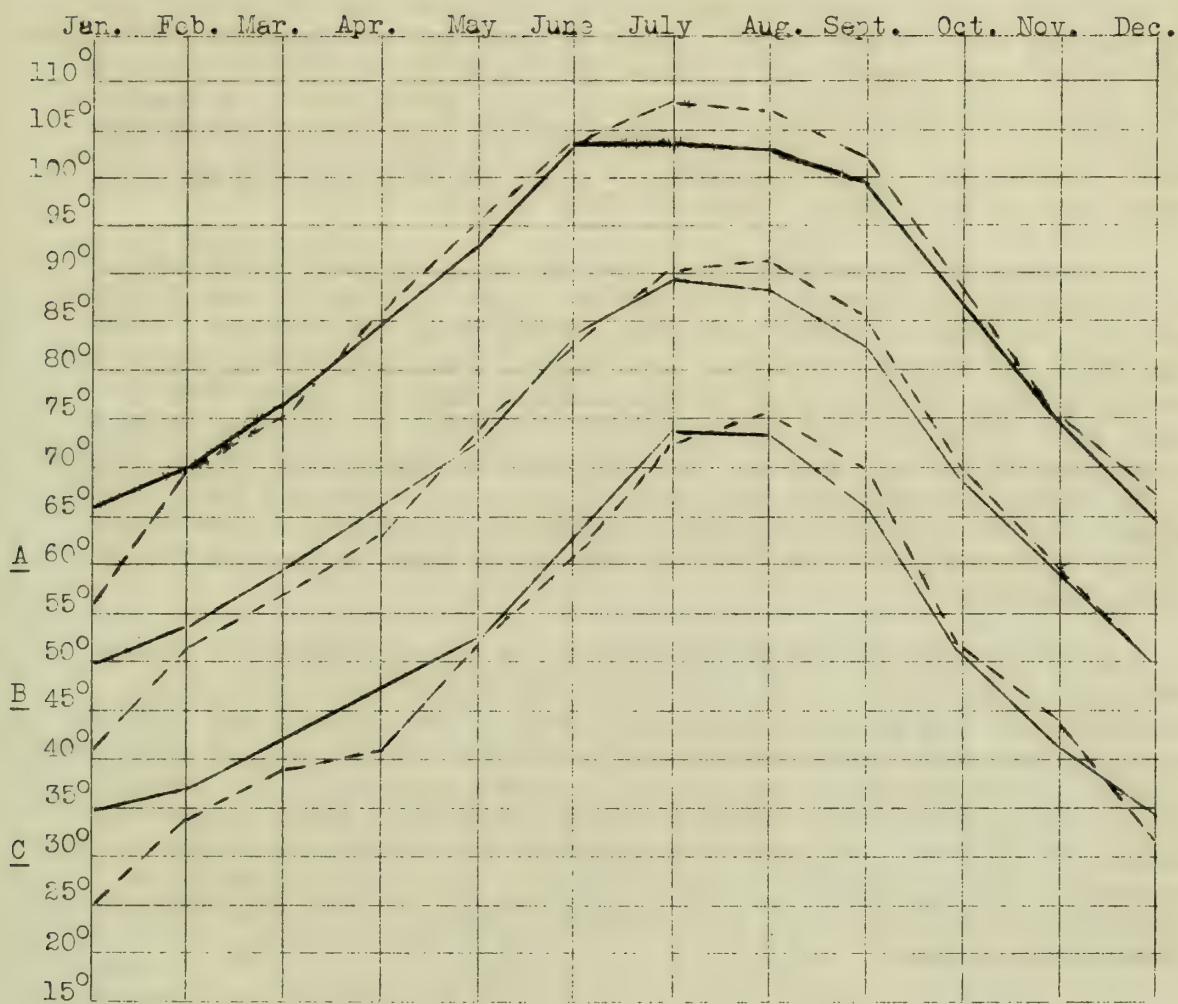
the curve downward in the fall is much steeper than is the upward curve in the spring. In other words, our temperatures drop in the fall much more quickly than they rise in the spring. We also see that normally December and January are the coldest months, being about equal, and that July is the hottest month with August only slightly cooler.

Now, turning to a comparison of the past year's temperatures with the normals, we find that the year was far from normal in many ways. January was much colder than the other winter months bringing temperatures which dropped to as low as 13 degrees above zero on several nights, freezing water pipes and causing much discomfort to the eastern tourists who came to the sunny Southwest to escape the cold. When the month was over and the "means" taken, it was found that they were approximately 10 degrees below normal. Then, following the dotted line indicating this past year's temperatures in comparison with the solid line indicating the normal temperatures, we find that the mean maximum temperatures jump back to normal in February and by April have begun to climb slightly above normal. The mean minimum temperatures stay well below normal until May when they approach, but do not reach, the normal. Thus our spring months had warmer days and cooler nights than normal. By the time July was reached, the days had become exceptionally hot and the mean maximum temperatures go far above normal. However, the nights still were a little cooler than normal so that the mean temperature was only slightly above normal. By August the nights too had become warmer than normal and the days continued exceptionally hot, thus all of the current season means were far above normal. This continued through September, which seemed very warm for September, and then in October we find temperatures running more closely to normal where they continue for the rest of the year.

From the above facts, it will be apparent that last winter was an exceptionally cold one, and that from the end of June until early in October we had an abnormally hot summer. In speaking of the hot summer, it might be well to point out that between June 10 and September 20 there were only three days when the maximum temperature stayed below 100 degrees. From July 1 to September 1, there were only 14 days when the temperature stayed below 105 degrees. That means that we had many, many days of extreme heat reaching as high as 114, 115, and one day 117 degrees. The nights too did their part in making the summer a hot one with many nights never going below 80 degrees.

Turning our attention now to a consideration of the facts brought out by the graph of precipitation, we notice what seems to be a very irregular curve. Especially is that true for this past year's record. There is, however, a very definite story told in this graph. Close study will show that we may expect a peak of rainfall in the month of December with a gradual decline through the rest of the winter months to a low in the spring months of April, May, and June. Our summer thunder storms begin early in July and bring the curve up practically as high as the peak of December. The summer thunder storms continue through August, keeping the curve high, but in September the curve drops off to

TEMPERATURES



KEY-

October 1936 through September 1937 -----
 Normal _____

A - Mean Maximum
B - Mean Temperature
C - Mean Minimum

PLATE 1

a moderate low from which it gradually recovers to the peak of December. Thus we may expect heavy rains in December and in July and August with more moderate rainfall during the rest of the year except in the spring when we have very little, if any, rainfall.

Studying the graph line for this past year we see that it has been much more irregular than the normal curve. The two outstanding points at which this past year's rainfall is at variance with the normal are the extreme peak of the winter months of December and January (which were far above even normal) and the fact that most of our summer rainfall came during September which is normally dry. These months of excess rainfall were offset by lows in other months, particularly April and June in which no rain fell at all, so that the total for the year is very close to the normal figure of 10.29 inches.

Visitors are often surprised when we reply to their questions as to the amount of rainfall. It seems to be the opinion of most tourists that all deserts are alike in having little or no rain at all. It is true that our storms frequently last only a few hours during which an amount of rain falls that in other sections would be spread over a whole day. Thus the run-off is much greater than in other sections where rain falls more gently. Our area cannot absorb and retain sufficient water to change the character of its vegetation, and thus it remains a desert with fauna and flora adapting themselves to its conditions. Evaporation, also, is much more rapid than in areas having a higher humidity.

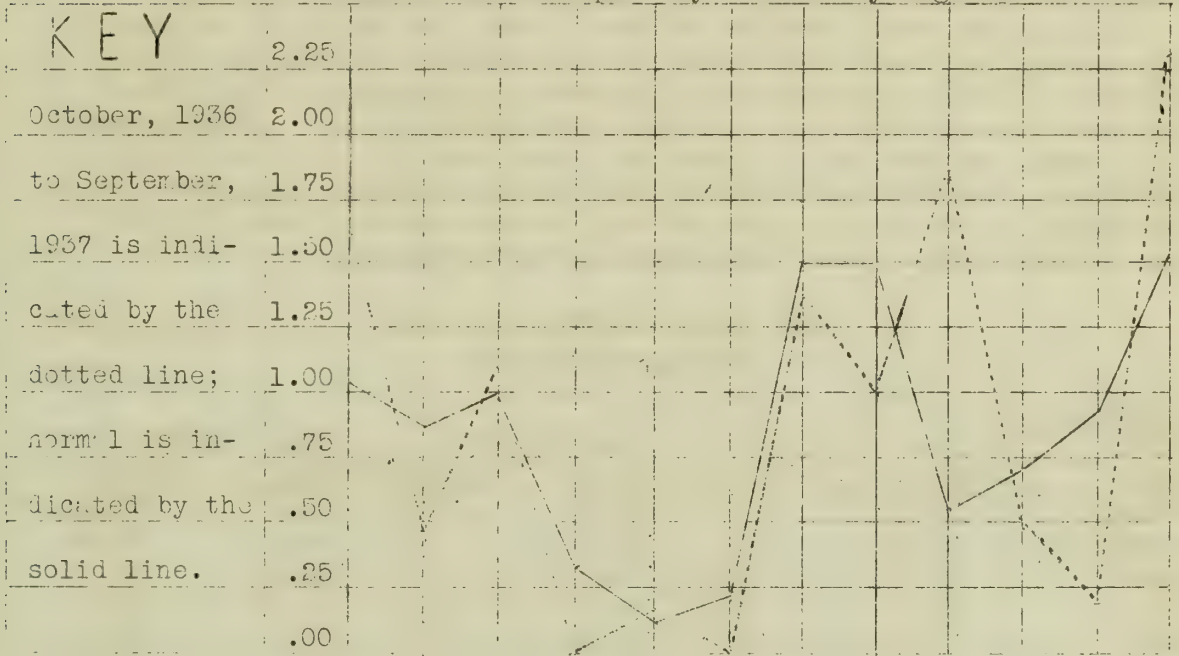
Does rainfall here have any bearing on temperatures? It is the writer's opinion that it does not have any effect worth mentioning. You will note the precipitation peaks come in the hottest and coldest parts of the year. Does that prove there is a connection, or that there is not a connection? To the writer it proves nothing at all except that there must be other factors at work which this study cannot consider. To be sure, our summer thunder showers do seem to lower the temperature a few degrees for a day or so but, from the standpoint of human relief from the heat, the increased humidity more than offsets the lower temperatures.

Summing up, we might say that while the desert has extreme heat in the summer months there are many months during the year when the temperatures are most enjoyable. We have our wintry days now and then, especially during January, when an over coat is needed even in the middle of the day. Many visitors from other sections of the country remark about the clear air and the cloudless skies on so many days. For the past year there have been 228 clear days, or 63%; 91 partly cloudy days, or 25%; and 46 cloudy days or 12%.

The weather seems to be the most important subject for conversation in the summer in normal years, but this past winter brought itself for-

PRECIPITATION

Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.



NORMAL

OCTOBER, 1936 to SEPTEMBER, 1937

January	1.06	1.61
February	.87	.45
March	.99	1.10
April	.34	.00
May	.11	.14
June	.22	.00
July	1.47	1.37
August	1.52	1.03
September	.55	1.87
October	.68	.51
November	.93	.17
December	1.55	2.25

ANNUAL	10.29	10.50
--------	-------	-------

PLATE 2

WEATHER AT CASA GRANDE NATIONAL MONUMENT (CONT.)

cibly to our attention with low temperatures. The year has been abnormal in many respects but, in making comparisons with the weather conditions in other sections of the nation, we can't complain, as there have arisen no serious human difficulties connected with our weather conditions. We dislike the heat in the summer, but we do not succumb to it as people do in other sections of the nation. We shiver in the winter, but getting out in the sun during the day we thaw out and feel better. Visitors all want to know how hot it gets, and how much rain we have, and does it snow here, etc. Our weather records are now becoming complete enough so that we can begin to answer the questions intelligently. Perhaps, as the years roll by and our weather records accumulate, a better normal may be struck, but for the present this may serve to record some of the weather conditions which are most apparent.

CASA GRANDE NATIONAL MONUMENT Weather Statistics

Temperatures:

Month	Mean Temperature		Mean Maximum		Mean Minimum	
Month	Normal	'36-'37	Normal	'36-'37	Normal	'36-'37
:January	: 49.4	40.2:	65.6	55.7:	34.1	24.7:
:February	: 53.4	51.5:	69.9	69.5:	36.8	33.5:
:March	: 59.2	56.8:	76.2	75.0:	42.1	38.7:
:April	: 66.1	63.0:	84.8	86.0:	47.2	40.8:
:May	: 72.6	73.6:	92.9	95.5:	52.1	51.7:
:June	: 83.2	82.3:	103.5	103.9:	62.9	60.7:
:July	: 89.1	90.1:	103.9	107.9:	73.4	72.3:
:August	: 88.2	91.2:	103.0	107.0:	73.3	75.5:
:September	: 82.5	85.9:	99.3	101.9:	65.9	69.9:
:October	: 68.8	69.8:	86.9	88.2:	50.7	51.3:
:November	: 58.9	59.7:	74.8	75.6:	41.2	43.8:
:December	: 49.4	49.4:	64.4	67.4:	34.3	31.3:

Precipitation:

Month	Normal	'36-'37
January	1.06	1.61
February	.87	.45
March	.99	1.10
April	.34	.00
May	.11	.14
June	.22	.00
July	1.47	1.37
August	1.52	1.03
September	.55	1.87
October	.68	.51
November	.93	.17
December	1.55	2.25
Annual Total	10.29	10.50

RUMINATIONS

on another visit of the Chief.

It has been a great month, Chief, and the outstanding event, of course, was the visit of yourself and Mrs. Cammerer.

I think the first time we met was at the Petrified Forest about seventeen or eighteen years ago, wasn't it? I remember yet how surprised I was that you didn't turn out to be an elderly man with a long beard! That was a very pleasant meeting. Mrs. Cammerer was along then and after the official work was finished we went over and spent a few hours in a remote part of the desert lying around in the sunshine hunting for rubies in the ant hills; do you remember that? Where we were lying then is now within the boundaries of the Petrified Forest National Monument, within a hundred yards of a paved highway and thousands of visitors walk over that ground every month.

We then went up by train to Gallup, New Mexico, and took Bill Turner and that old Dodge of his for our guide, counselor, and friend, and made the trip out to El Morro and back by way of Zuni. That was a great trip except that the Missus was not able to go along and that took the fine edge off the fun. Do you remember we checked Bill over for canteens, shovel, and chains before we left town? Almost all the road we traveled that day has been relocated and graded and is on the way to being a weatherproof highway within a few years.

Again there was the time when you and Mrs. Cammerer stopped off with us after the Yosemite Conference and rested up here for a couple of days. Again, after official matters were out of the way, we lay around in the sunshine and talked of cabbages and kings and hunted Indian beads where the dead had been cremated six or eight hundred years ago. And I took you back to Casa Grande in that new Model "T" Ford, which some folks called the Babe because of the care I took of it and some called it the Regulator because they said everything on the road went by it, -- and you folks went to the picture show and had to get up and leave in the middle of the thriller in order to catch your train, and never knew how justice finally caught up with the villian. I know you remember all that because you recalled it to mind when you were here the other day.

Of course in the meantime we were meeting here and there at conferences, and in Washington occasionally, and on official business in the field, but at such meetings we were both pretty busy with a lot of people and the personal pleasure of such meetings could not be so great. So we were glad to have word from you this time that you could stop two or three days with us on this trip, because we have a little force built up here at headquarters now, our work having expanded hither and yon through the country as the years passed, and we wanted these other folks to know you somewhat as we knew you.

They had apparently kept you mighty busy and you had worked long

hours and hard before you arrived here from the City of Mexico; you were tired. I was telling Hugh the other day about the lad who had been driving you for several days in your journeys about the City and its environs; who was so grateful at the present you gave him upon leaving and who asked if he could not give you something in return. He was quite puzzled at your laughing remark that above all things you would like for him to give you a couple of months of those wonderful Mexican siestas and a little burro to carry your fertilizer around the yard at home when you were planting your flowers in the spring! Siestas and burros were too common for him to appreciate in his young life. Well, we couldn't furnish you the burro but we will bear witness that you caught up on the siestas while you were here to the tune of about four hours per day!

It was a great visit. We knew you were as badly broke as we were so we knew we couldn't talk you out of any men, or money, or marbles and so you didn't have to keep your defenses up, and we knew that, for the time being at least, our machinery was running in oil, so to speak, so you needn't use the official dignity on us, and, as Tom Weeden once said in the Florence Blade-Tribune about 35 years ago concerning a dance which he was writing up, "a fine time was had by everybody and there wasn't a single fight!".

The whole outfit here did enjoy that evening when, after Natt's pictures, you just sat around like one of us and talked of this and that and gave us a general picture of the Service and proved to us that the man up at the top worked just as hard and had just as much fun as any man down the line,--of course, that wasn't what you were talking about, it just showed through as a side light of the talk. They are working for a man they know from now on and it makes more difference than you would think when the going gets hard.

Come again as soon as you can. We will always have the sunshine and the siestas and I hope we will have a clean slate so we won't need to use much dignity. Next time I would like for the funds to be in better shape so I could talk you out of a few thousand, but, be that as it may, you will ever be welcome and we all send the very best regards to both of you.

Cordially,

The Boss

SOUTHWESTERN MONUMENTS

MONTHLY REPORT



N O V E M B E R - - - 1 9 3 7

DEPARTMENT	OF	THE	INTERIOR
NATIONAL	PARK	SERVICE	

SOUTHWESTERN MONUMENTS

MONTHLY REPORT



N O V E M B E R - - - 1 9 3 7

DEPARTMENT	OF	THE	INTERIOR
NATIONAL	PARK	SERVICE	

SOUTHWESTERN MONUMENTS
NOVEMBER, 1937, REPORT

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SOUTHWESTERN MONUMENTS PERSONNEL

HEADQUARTERS, Southwestern Monuments, Coolidge, Arizona: Frank Pinkley, superintendent; Hugh M. Miller, assistant superintendent; Parke Scule, chief clerk; Millard Singerman and Luis A. Castellum, clerk-stenographers; J. H. Tovrea, assistant engineer; Dale S. King, assistant park naturalist; Charlie R. Steen, junior park archeologist; Natt W. Dodge, junior park naturalist; Ira G. Goodwin and William Sharpe, CCC clerks; F. E. Stonehecker, machinist; J. L. L. Baehr, utility man.

<u>FIELD STATIONS</u>	<u>AREA</u> in Acres
1. <u>Arches</u> - Moab, Utah; Harry Reed, custodian- - - - -	4,520.00
2. <u>Aztec Ruins</u> - Aztec, N. M.; T.C. Miller, custodian; H. Summerfield Day, park ranger-archeologist - - - - -	25.88
3. <u>Bandelier</u> - Santa Fe, N. M.; C. G. Harkins, custodian - -	26,026.20
4. <u>Canyon de Chelly</u> - Chin Lee, Ariz.; John Will Faris, cu. -	83,840.00
5. <u>Capulin Mountain</u> - Capulin, N. M.; Homer Farr, custodian-	680.37
6. <u>Casa Grande</u> - Coolidge, Ariz.; A. T. Bicknell, custodian; David J. Jones, park ranger; John Cocks and James Rogers, CCC guides- - - - -	472.50
7. <u>Chaco Canyon</u> - Chaco Canyon, N. M.; L. T. McKinney, cu. -	21,512.37
8. <u>Chiricahua</u> - Douglas, Ariz.; Frank L. Fish, custodian; Homer Bennett and Elijah Alton, CCC guides- - - - -	4,480.00
9. <u>El Morro</u> - Ramah, N. M.; Robert R. Budlong, custodian - -	240.00
10. <u>Gila Cliff Dwellings</u> - Cliff, N. M.; No custodian - - - -	160.00
11. <u>Gran Quivira</u> - Gran quivira, N. M.; George L. Boundey, cu.	610.94
12. <u>Hovenweep</u> - T. C. Miller, Aztec, N. Mex., in charge - - -	285.80
13. <u>Montezuma Castle</u> - Camp Verde, Ariz.; Earl Jackson, custodian; Jesse D. Jennings, park ranger - - - - -	560.00
14. <u>Natural Bridges</u> - Blanding, Utah; Zeke Johnson, custodian	2,740.00
15. <u>Navajo</u> - Kayenta, Ariz.; John Wetherill, custodian; Milton Wetherill, park ranger-historian - - - - -	360.00
16. <u>Organ Pipe Cactus</u> - Ajo, Arizona; no custodian- - - - -	330,670.00
17. <u>Pipe Spring</u> - Moccasin, Ariz.; Leonard Heaton, actg. cu.-	40.00
18. <u>Rainbow Bridge</u> - Tonalea, Arizona; no custodian - - - - -	160.00
19. <u>Saguaro</u> - Tucson, Arizona; no custodian - - - - -	63,284.00
20. <u>Sunset Crater</u> - Flagstaff, Arizona; no custodian- - - - -	3,040.00
21. <u>Tonto</u> - Roosevelt, Ariz.; Thomas Onstott in charge- - - -	1,120.00
22. <u>Tumacacori</u> - Box 2225, Tucson, Ariz.; L.R. Caywood, cu.- -	10.00
23. <u>Walnut Canyon</u> - Flagstaff, Ariz.; Paul Beaubien, junior park archeologist - - - - -	960.00
24. <u>White Sands</u> - Alamogordo, N. Mex.; Tom Charles, custodian; James B. Felton, park ranger- - - - -	142,987.00
25. <u>Wupatki</u> - Flagstaff, Arizona; no custodian- - - - -	35,865.30
26. <u>Yucca House</u> - Cortez, Colo.; T.C. Miller, Aztec, N. Mex., in charge - - - - -	9.60
Total Area (in acres) - - -	724,659.96
(1,132.2 square miles)	

OPENING

By Frank Pinkley, Superintendent, Southwestern Monuments, Coolidge, Arizona.

Dear Mr. Director:

We are making a slight change in our monthly report this month, putting the Superintendent in the leading position with his summary of the period.

We will try to hold this summary within two pages and cover only the highest of the high lights for the month. If you are in a hurry, unable to spend more than three minutes of the month on the Southwestern Monuments, this "Opening" will tell you of the best of the good and worst of the bad breaks we have had during the month.

Just behind this "Opening" you will find the Condensed Report, which will be a very short summarization and condensation, never exceeding six pages, of the field reports from the twenty-six monuments which are handled out of this office.

Following the six pages of the condensed report, you will find the Reports from the Men in the Field. These will run about 30 to 40 pages and in them you will find much more detail in the actual words of the man on the job.

Next we have a Headquarters section where you may learn what was done by the various departments at Coolidge during the month and where data connected with visitors is recorded for inspection and study.

This closes the report proper, but if you stop there you will miss something. For a long time we Southwestern Monument folk were trying to keep each other posted on new discoveries, results of work, etc., with no very great success until it dawned on me that such material really constituted a supplemental monthly report to be circulated amongst ourselves. And so we began tying it on the monthly report as The Supplement. If you can find time to read it, I am sure you will find something of interest in it about us and our work, but it is truly a supplement and the report is complete without it.

You will find a convenient Index at the front of the report by which you can find any section with the flick of an eye and the flip of a page. Following the index is a Personnel page with the name, job, and post office address of each of our men and the location and area of each of our monuments.

Although the report is bulky, we have studied long and hard to make it readable and quickly accessible to busy people including ourselves, for we use the current copy as a handbook on three desks at headquarters. It must be remembered, too, that these men among the Southwestern Monuments have a right to write a big report; they are

OPENING (CONT.)

running a big job! 291,000 visitors in 1,132 square miles; 26 areas scattered over four states!

NOVEMBER

The month as a whole over our district has been almost a normal one. We have heard of one large hotel in Southern Arizona which reports over a hundred cancellations of winter visitors and of one large dude ranch which reports over forty cancellations, the majority of these must be based on the recent market upset in the East, since this was almost all eastern business coming west for vacations.

The weather has been good and the roads are in good condition. Visitors are using these roads in about the usual numbers for the time of the year. In the southern part of the district the quality of the visitor is improving as is natural at this time of year, but it seems to us that the grade is a little higher than usual this fall.

Among the personnel changes, our new Chief Clerk, Parke Soule, with his family, arrived at headquarters during the month and is settling down to learning the routine of his position. Ranger Don Erskine was ready at the end of the month to leave Casa Grande for his new assignment at Boulder Dam. Ranger James Felton was transferred during the month from Tumacacori to White Sands. Custodian Caywood has been absent from Tumacacori on official business in Berkeley, California. Archeologist Steen has been detailed to special duty at Tumacacori until further orders with the expectation of being there for six months or more. Joe Shepperd has taken up the road maintenance at White Sands.

Finances have caused us considerable worry during the month. We had to ask for a change on our outline of work on about ninety percent of our accounts in order to get ourselves shaken down to the new balance after the ten percent cut was made in our appropriation. We got approval on this change near the end of the month. We do not yet see our way clear to the end of the fiscal year but we are trimming all the corners and hoping for the best. We are letting the two positions recently vacated by transfer stand vacant, one for several months and the other probably for the remainder of the fiscal year in order to make savings. Such methods will save us money but will throw extra work on the remainder of the organization and will cut the quality of service to the public. There was simply no fat at all in our appropriation when the Bureau of the Budget finished with it and so these savings are coming right out of our bones.

We are now in the process of working over master plans for 16 or 18 of our monuments and sending them in to the regional office for re-drafting.

Cordially, *Frank Pickles* Superintendent.

CONDENSED REPORT

IN WHICH ARE GIVEN THE HIGHLIGHTS OF THE MONTH

Coolidge, Arizona,
December 1, 1937.

The Director,
National Park Service,
Washington, D. C.

Dear Mr. Director:

The Condensed Report for the month of November, 1937, follows:

<u>TRAVEL</u>	Nov. <u>1937</u>	Nov. <u>1936</u>	Nov. <u>1935</u>	Travel year <u>To Date</u>
Arches	106	---	---	186
Aztec Ruins	771	654	409	1,653
Bandelier	982	518	528	1,915
Canyon de Chelly	*45	45	30	194
Capulin Mountain	*600	600	900	1,700
Casa Grande	2,664	2,909	2,165	5,146
Chaco Canyon	134	585	528	525
Chiricahua	717	330	175	1,444
El Morro	190	78	45	386
Gila Cliff Dwell.	*10	---	---	25
Gran Quivira	213	290	340	411
Hovenweep	*0	---	---	0
Montezuma Castle	705	353	445	1,439
Natural Bridges	38	---	124	147
Navajo	2	---	---	72
Organ Pipe Cactus	*500	---	---	1,400
Pipe Spring	200	180	619	267
Rainbow Bridge	*10	---	---	66
Saguaro	*1,600	742	---	3,100
Sunset Crater	*183	205	96	1,183
Tonto	250	233	396	500
Tumacacori	903	1,194	1,141	1,704
Walnut Canyon	544	353	334	1,385
White Sands	6,328	4,907	---	13,171
Wupatki	90	107	93	175
Yucca House	*20	---	---	70
TOTAL	17,805	14,283	10,452	38,264

*Estimated

In general, travel for November may be classed as normal. Fine

CONDENSED REPORT (CONT.)

weather throughout the Southwest encouraged visitors to linger, whereas the seasonal slackening of travel in the northern areas cut down the attendance at these monuments. A careful analysis of the records for this month, together with a comparison of these records with those of a year ago and of last month is made on pages 389-90 of this report. Travel for November showed a healthy increase over that for October.

COO GENERAL

010 Matters of Unusual Interest or Importance

El Morro: An experiment by the custodian is underway to determine the efficacy of a solution designed to harden the sandstone thereby reducing the rate of wear (see p. 352).

Natural Bridges: Heneferth, in accord with a decision rendered by the United States Board of Geographic Names, the natural bridges known in the past as Caroline, Edwin, and Augusta will be termed Kachina, Owachomo, and Sipapu (see p. 396 of Supplement). A party of Utah State officials investigated the proposed highway route linking Mesa Verde and Zion National Parks (see p. 354).

White Sands: Interest in sodium sulfate deposits has resulted in studies by scientific and commercial organizations (see p. 342).

020 Weather

From practically the entire group of Southwestern Monuments come reports of fair weather during the month just past. "Clear", "fine", "ideal", "unseasonably dry", and "dry and windy" are the adjectives found throughout the reports from the field this month.

100 ADMINISTRATION

123 Visits by National Park Service Personnel

Headquarters: Cal. Miller, Tom Onstott, Lyle Bennett, Erik Reed, Ward Yeager, Auditors Edwards and Brown, for Garrison of Yosemite, Jim Brewer, Jim Felton, Frank Russell, Jack Diehl, and Adrey Borrell.

Arches: Superintendent Muesbaum.

Aztec: L. McKinney, J. Paris, Dale King, Paul Beaubien.

Bandelier: A party of 24 Park Service employees visited Bandelier on November 14 (for details, see p. 378). Jim Hamilton, C. Richey, H. H. Cornell, John Haile, M. R. Tillotson, J. N. Gould, Erik Reed, J. Veale, P. J. Lakey, J. P. McDougal, L. V. Kanderu, E. A. Pesonen.

Casa Grande: Bill Stevenson, Lyle Bennett, Erik Reed, Jack Diehl, Frank Russell, Jack Haile, Adrey Borrell, Lon Garrison, Ward Yeager.

Chaco Canyon: Ward Yeager, Dale King, Paul Beaubien, Jack Diehl, J. H. Tovrea, Cal. Miller.

Chiricahua: Hugh Miller, Ward Yeager, Frank Russell.

Montezuma Castle: Andy and Ven. Clark, Jack Diehl, J. Tovrea.

Natural Bridges: Harry Reed.

Pipe Spring: A. Keuhl, A. E. Borrell, W. F. Hamilton, Christianson.

Tumacacori: F. Pinkley, Hugh Miller, J. Tovrea, J. Diehl, Msers.

Doty and Eastman, C. Maguire.

Walnut Canyon: Cal. Miller, Andy Clark, Dale King, Jack Diehl, J. Tovrea, Erik Reed, C. Richey, and Al. Keuhl.

CONDENSED REPORT (CONT.)

180 Publicity

White Sands: Maintaining its customary lead, White Sands reports articles in the following publications: Quill and Scroll, Holland's Magazine (November issue), and the El Paso Times. Several motion pictures, including one by Mark Andrews of Hollywood, have been taken in the Sands. Dr. Halliday's School of Osteopathy, Des Moines, Iowa, Log Book contained mention of the area. (See p. 343).

200 MAINTENANCE, IMPROVEMENTS, AND NEW CONSTRUCTION

210 Maintenance, Unusual

El Morro: Eighteen truckloads of earth were required to bank the custodian's residence as a protection against the coming cold. A 10-by-12-foot fruit cellar has been constructed (see p. 351). An effort is being made to protect steps cut in the soft sandstone from being worn away as rapidly as in the past (see p. 352).

220 Improvements

Pipe Spring: A six-by-seven-by-seven-foot stone and cement gasoline house has been completed and a garage is nearly finished (see p. 364).

Casa Grande: The grease rack was finished this month (see p. 371).

230 New Construction

Montezuma Castle: The revetment repair job is completed (see p. 359).

Tumacacori: Details of the progress of work on the Tumacacori museum project may be found on pgs. 381-2-3.

231 CCC Work

Chiricahua: Seven hundred square yards of banks have been sloped, fill slopes have been widened, roads surfaced, one mile of highway maintained, one mile of trail maintained, drainage provided, the trail surfaced, and overcast removed. Plastering has been completed in the storage and exhibit rooms of the Administration Building. Masonry walls are up to a height of six feet in the employees' residence. (For details, see p. 348).

Casa Grande: Barracks building and cesspool are almost completed for the fly camp of 24 men (see p. 371).

Pipe Spring: The blacksmith is making fireplace grills for the campground (see p. 364).

Bandelier: For details of CCC work at Bandelier, see page 379.

Mobile Unit: For details, see page 387.

300 ACTIVITIES OF OTHER AGENCIES IN THE MONUMENTS

320 Cooperating Government Agencies

Bandelier: Twelve "bug trees" were treated in cooperation with the Soil Conservation Service (see p. 378). Two days were devoted to insect control work.

321 Non-government Agencies

White Sands: A survey to ascertain the advisability of exchanging lands outside the monument for state school lands within is being made by the New Mexico Land Commission and state geologists (see p. 342).

CONDENSED REPORT (CONT.)

Walnut Canyon: The Museum of Northern Arizona, of Flagstaff, has been aiding in the bird-banding program (see p. 348-49).

350 Donations and Accessions

Montezuma Castle: One new herbarium case (see p. 359).

Headquarters: One hundred fifty library file cases and 56 small plants for landscaping.

Pipe Spring: One new herbarium case (see p. 365).

Wupatki: One book, one map, and one periodical (see p. 368-9).

Casa Grande: Motor-testing equipment and boring bar (see p. 371).

400 FLORA, FAUNA, AND NATURAL PHENOMENA

410 Ranger, Naturalist, and Guide Service

White Sands: Ranger Jim Felton took up his duties November 18.

Casa Grande: Ranger Don Erskine has been transferred to Boulder Dam Recreational Area. CCC enrollees John Cocks and James Rogers are aiding in the guiding (see p. 371).

El Morro: An encouraging interest on the part of local schools has been noticed during the month (see p. 350).

420 Museum Service

Montezuma Castle: One display case has been altered and a new exhibit installed (see p. 359).

460 Birds

Montezuma Castle: Twenty-five species of birds have been observed (see Betty Jackson's notes on page 361).

Navajo: At Be-ta-ta-kin Beko, 18 species were recorded (see p. 345).

Walnut Canyon: One recovery was recorded and 171 new birds, 49 repeats, and 16 returns were taken at the station (see p. 348-9).

Pipe Spring: At this banding station, 103 birds were taken during the month (see p. 365).

500 USE OF MONUMENT FACILITIES BY THE PUBLIC

520 Conditions affecting

Road conditions are credited or blamed more than any other single factor for influencing travel to individual monuments.

El Morro: Cold winds reduce the length of time spent by visitors on the field trip.

Casa Grande: A sudden drop in attendance about the middle of the month has not been satisfactorily explained (see p. 370).

Aztec and Chaco: The effect on travel of keeping open the new Wolf Creek road during the winter has aroused interest and discussion (see p. 389).

600 PROTECTION

640 Destruction of Predatory Animals

Montezuma Castle: Two domestic cats were removed.

650 Signs

Walnut Canyon: All signs have been repainted or replaced (see page 348).

Montezuma Castle: Seven new enameled road signs were placed and

CONDENSED REPORT (CONT.)

30 "No Hunting" signs prepared this month (see p. 359).

Wupatki: Maintenance painting was done on directional signs. A sign is felt for larger signs at approach junctions due to improvement of main highways and consequent increased speed of traffic (see p. 368).

Sunset Crater: Maintenance painting has been done (see p. 369).

Capulin Mountain: The State Tourist Bureau has placed helpful markers on Highway 87 (see p. 376).

660 Sanitation

Casa Grande: The sewer pump has been repaired.

700 ARCHEOLOGY, HISTORY, and PRE-HISTORY

Chiricahua: On November 14, two pioneer graves were dedicated (see p. 346).

Wupatki: The ranger in charge has collected animal bones from the ruins and turned them over to the Museum of Northern Arizona which is conducting research on the subject (see p. 368).

900 MISCELLANEOUS

MAIL COUNT

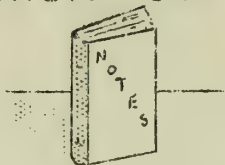
Incoming:		
Official	1,707	
Personal	<u>1,140</u>	
Total incoming		2,847
Outgoing:		
Official only	<u>2,603</u>	
Total outgoing		<u>2,603</u>
TOTAL POSTAL MAIL		5,450
Telegrams:		
Incoming	25	
Outgoing	<u>21</u>	
Total telegrams		<u>46</u>
GRAND TOTAL PIECES OF MAIL HANDLED		5,496

Cordially,

Frank Pinkley,
Superintendent.

FIELD REPORTS

FROM THE MEN ON THE JOB



WHITE SANDS

By Tom Charles, custodian,
Alamogordo, New Mexico.

There is one sad piece of news that we have to report this month. Mrs. E. A. Baird, wife of your good friend Gene Baird, the Bill Rogers of the White Sands, died in the car as Gene was bringing her from the ranch to the doctor. She had not been ill--had complained a little about indigestion that morning--and died just before they reached the point of the sands. I am sure that you, Doctor Bryant, Miss Story, and many other Park Service officials will grieve with the local White Sands family.

The Sands seem to be stepping out into full-sized monument caliber this month. Jim Felton and "Sis" arrived on November 18 and have taken up their duties as ranger and arranger. So far they seem equal to the jobs. Joe Shepherd and family were already on the job when Jim arrived. They are living in the eight-room Garton house. Joe is for the new fangled six-man football team; he has the full squad, six boys, husky and rosy cheeked. Each one looks as if he might have the wallop necessary to carry the ball across.

The Arizona Chemical Company writes from New York that they have leased some three or four sections of land immediately south of the monument and are sending in a core drill and a crew to make thorough tests for sodium sulphate.

Last week I had Hon. Frank Worden, New Mexico Land Commissioner, together with his state geologists and a professor of geology from the state School of Mines, over on the old lake bed to look into the possibilities of exchanging school sections within the monument for federal land outside. Mr. Worden is willing and anxious to exchange these lands provided he can get land of equal value. The proved sodium sulphate area is near the old soda deposit and is on the monument. Of course, that does not mean that there is no other land of equal value and similar deposit at the north end of the lake. It is my understanding that Mr. Worden expects to make the necessary tests at the north end.

During the past week, Dr. W. A. Craig of Texas Tech. at Lubbock, made a special trip here to study the deposit of sodium sulphate at White Sands. So you can see that the development of Glauber Salts at White Sands is taking quite a boost.

WHITE SANDS (CONT.)

The buildings are coming along nicely. Jim's residence was not quite ready for him as the stove was not connected up, and there was a little fixing to be done before the floors were in shape. I think the Feltons were so delighted with the new home that a little thing like a day's delay didn't even dampen their ardor.

Our publicity may have been dragging a little this month, but we have had enough nibbles from the big ones to make up for any shortage. For instance, we have had a threat from Miss Story that we may get a picture in the National Bulletin soon; we are submitting photographs to the Magnolia Petroleum Company, Dallas, Texas, for selection as one of the Twelve National Attractions for their 1939 calendar; the publisher of "Picturesque" has written for pictures for use in their January publication; we had a nice notice in the Log Book of Dr. Halliday's School of Osteopathy in Des Moines, Iowa, and he writes that he is showing the White Sands movie reel to his school this week and is supplementing it with moving pictures of his own. Mark Andrews of Hollywood, an amateur movie man who specializes on National Parks and Monuments spent a day at the Sands taking colored movies. He travels over the United States and shows these pictures in the big show windows which he installs in large cities. Congressman J. J. Dempsey and two daughters visited the Sands and took a couple of pictures to hang in his office in Washington. So this month's publicity is reaching out into the future.

As for the present, our local secretary of the Chamber of Commerce entered an article on the White Sands in "Quill and Scroll" and took first prize in an international descriptive contest. The organization, I understand, is composed of young, ambitious journalists. Arthur Coleman, associate editor of Holland's Magazine, had a feature story in the November issue in which he gives a few figures which I believe will be of interest to you. According to Mr. Coleman, every man, woman, and child in New Mexico had six out-of-state visitors last year; there were 1,000,000 foreign cars. They stayed an average of four days and each occupant spent an average of nearly \$6.00 a day making a total \$60,000,000 tourist business. Mr. Coleman thinks we are just taking our stride, the race is yet to come. He says, "Speaking of gypsum, school is out"; and again, "In the southwest corner of the state is one of the most mystifying of Nature's phenomena, the White Sands; shifting dunes of snowy grains".

Nat Campbell, Sage of the Sagebrush and co-editor of the El Paso Times, has given us volumes of editorial page, top o' column stuff. "Old Nat" is the author of "Filosophy & Foolishness", one of the Southwest's best sellers and he writes such gems as:

WHITE SANDS AT MIDNIGHT

Snowy whiteness, mile on mile,
And not the faintest sound:
A thousand ghosts are here tonight.
You can see 'em all around.

Some are standing deathlike still;
Others come and go
Dreamy—like upon the wind
That whispers soft and low.

Starlight melting into all
Makes the vision seem
Like you're in some spirit land
Stranger than a dream.

I'm making my last stagger at the crowd. We will try to work Jim into it by next time. The total registration was 886. Texas led with 360, New Mexico 218, California 39, Oklahoma 22, Arkansas 20, Colorado and Kansas 17 each, Missouri 13, Ohio 12. There were 33 states and two foreign countries represented. On the basis of 14% registration, our attendance for the month was 6328.

*****SWM*****

We are all saddened by the news of the passing of Mrs. Baird, and Gene has the deep sympathy of all of us who know him. Mrs. Baird was so well known and so well loved that her memory will live long in southern New Mexico where she lived and worked.--F. P.

*****SWM*****

NAVAJO

By Milton Wetherill, park ranger,
Kayenta, Arizona.

There's not much to report in the way of visitors as there is very little travel in this part of the country.

The weather has been mild for the canyon country and this elevation. Days have been warm and the nights cold. The sky has been overcast the biggest part of the time for the last month. The night of the seventeenth gave us a light rain which turned to sleet, leaving the ground white.

Temperature for the month: low, 36; high, 58.

I have reworked the trail to the ruins. This consisted of removing rocks and trimming trees and brush that was overhanging the trail. I have brushed the trail leading to the head of the canyon.

NAVAJO (CONT.)

This trail is used by parties taking photographs of the ruins from across the canyon.

NATURE NOTES

The Woodhouse Jays are still collecting acorns, scratching among the leaves, and finding the few that have been missed by the mice and chipmunks. We have six Mountain Chickadees and two Rocky Mountain Nuthatches feeding on suet. I have banded a few Juncos but they have been coming in small flocks never staying over two days and then moving on. The large part of the Juncos here now are Shufeldt and Montana. The following species have been observed at Be-ta-ta-kin Beko:

Woodhouse Jay	Mountain Chickadee
Gray Titmouse	Bush-tit
American Raven	Canyon Wren
Pinyon Jay	Rocky Mountain Nuthatch
Long-crested Jay	Western Robin
Red-backed Junco	Whit-breasted Woodpecker
Gray-headed Junco	Cooper Hawk
Montana Junco	Western Red Tail Hawk
Pink-sided Junco	Shufeldt Junco

Hosteen John spent two weeks at Be-ta-ta-kin. While there he made one cent (caught a skunk).

*****SWM*****

CHIRICAHUA

By Frank L. Fish, custodian,
Douglas, Arizona.

WEATHER

November was an ideal weather month for travel with cool nights and warm days. The first killing frost occurred on the 15th. as compared with November third - last year. No precipitation was recorded for the month. Range and forest areas are drying out but, due to the cool nights, fire conditions are not dangerous.

ROADS

Monument roads are in good condition with improvements progressing very nicely. Bill Stevenson's report covers the details.

Approach roads are in excellent shape. Pavement on the Bisbee--El Prieta section lacks about three and one-half miles from being completed. Very little progress was made on the county road from Willcox during November. Work is soon to start on the highway from Willcox to Lordsburg, New Mexico.

CHIRICAHUA (CONT.)

VISITORS

	<u>Cars</u>	<u>People</u>	<u>Out of State</u>
1937 - - - - -	145	717	258
1936 - - - - -	101	330	106

STATISTICS

	<u>No. of Parties</u>	<u>No. Attending</u>	<u>Guide Minutes</u>	<u>Total stay in Monument.</u>
1937 - - - - -	50	356	2,343	26,164
1936 - - - - -	16	58	1,290	

One hundred twenty-two of the out-of-state visitors were recent enrolled CCC boys from Texas who went through the monument in a guided party. Although they have taken other trips since, they have not been counted again.

On November 14, the dedication of two graves of pioneers killed by Apaches on April 4, 1832, brought in many locals (about 60); otherwise the increase this year is a natural one.

NATIONAL PARK SERVICE OFFICIALS

Hugh M. Miller, assistant superintendent, Southwestern Monuments was here on leave October 29, 30, and 31. Hugh was out south of the monument playing hide-and-seek with the elusive white-tail bucks.

Ward Yeager, November 15, 16, and 17 on forestry problems.

Frank L. Russell, recreational planner of the Santa Fe Regional Office, on November 21.

CCC OFFICIALS

A. W. Stockman, special investigator from the office of the CCC Director, October 25.

L. K. McVicker, CCC foreman SP-1-R, Santa Fe, New Mexico, November 21.

George Keller, CCC traveling mechanic, November 16 and 17.

OTHER GOVERNMENT AGENCIES

Fred Winn, supervisor of the Coronado National Forest, on November 14.

Gilbert Sykes, district ranger of the United States Forest Service, on November 5.

CHIRICAHUA (CONT.)

GENERAL

Employment in Cochise County has been curtailed somewhat in the copper industry due to falling prices. The smelter at Douglas, Arizona, is operating at 50 per-cent the output of September and October.

Stockmen received much lower prices for their livestock than was expected a few months ago. This was especially bad as many had to reduce their herds due to lack of moisture during the growing season of the forage plants.

OFFICIAL TRIP

The custodian was absent from the monument November 16, 17, and 18 by official orders. This time was spent moving Ranger Felton's household effects from Tumacacori to White Sands National Monument. I felt with Mr. Shepard, maintenance man at White Sands, that Felton had a lot of stuff just for a married man without a family. I trust nothing was broken as I heard never a rattle in any of the packages being unloaded.

*****SWM*****

Thanks are due Custodian Fish for the help he gave us in the transfer of the Felton furniture from Tumacacori to White Sands. It was a material saving in cash to use the truck instead of the railroad and we are going to have to watch expenses with a magnifying glass during the remainder of this fiscal year.--F. P.

*****SWM*****

CHIRICAHUA CCC

By William Stevenson, project
superintendent, Douglas, Ariz.

Two crews worked the entire month on the backsloping project. Three hundred square yards of banks were sloped one-half mile north of the intersection of Bonita Highway and Sugar Loaf Truck Trail. Materials were used in widening fill slopes. Four hundred square yards of bank were sloped one-half mile south of Bonita Park and the materials were used for surfacing in the vicinity of Massai Point.

One mile of Bonita Highway was maintained. Several small slides were removed and three-fourths of a mile surfaced. Ditches and culvert basins were cleared.

Sugar Loaf Trail (1 mile) was maintained. Additional drainage was provided and the entire trail surfaced. Also all overcast, which could be considered unsightly, was removed.

Plastering was completed in the storage and exhibit rooms of the

Administration Building. The completion of this building now awaits the selection of paint by the Landscape Department.

Masonry walls are completed to an average height of six feet on the Employees' Residence. This building will be turned over to the carpentry crew by December 4.

Work continued throughout the month on the rock quarry.

On November 16, 24 enrollees were assigned to Casa Grande National Monument to construct side-camp buildings.

*****SWM*****

WALNUT CANYON

By Paul Beaubien, junior park
archeologist, Flagstaff,
Arizona.

This month, 544 visitors arrived at Walnut Canyon. Continued clear weather accounts for the increase of 191 visitors over the same period last year.

Park Service visitors were Carroll Miller, Andy Clark, Dale King, J. H. Diehl, J. H. Tovrea, Erik Reed, Charles Richey, and A. C. Kuehl. Dale stopped by on a trip to Chaco Canyon and Aztec, and I seized the opportunity to accompany him. It was a fine trip. I saw a lot and learned a lot, but missed Jack Diehl and Tov. Chuck and Al. were by a few days later and checked this monument's master plan on the ground.

Another important visitor just arrived today--Dr. A. E. Douglass. He was taking pictures of trees to be used in his lectures on tree rings. Because of a previous engagement, he didn't have time to go down into the canyon to shoot Juniperus scopulorum, so I promised to send pictures of that one.

Early in the month I cleaned up and tried to obliterate several of the most prominent campfire sites near Observation Point. I have prepared a couple of signs forbidding camping and picnicking in that area. Right now I'm tearing down all the signs on the monument and either repainting or replacing them with new ones. Of course all these signs are home made and the Park Service will never be proud of them.

Next week, before I finish with the signs, I intend to locate some standing dead pines and bring them to the station. Later, when there is snow on the ground, they can be worked into tables for the camp ground. Chuck Richey has promised to send blue prints.

The bird trap was operated some this month but, for the time expended, fewer birds were caught than in other years. The birds just aren't here. Dale banded most of one Sunday, Lyndon Hargrave banded a

WALNUT CANYON (CONT.)

day and a half, and I banded a few on two other days. Altogether, 171 new birds, 49 repeats and 16 returns were taken. Most important was a card from the Biological Survey stating that one of my birds had been found by an Indian at Carrizo Canyon about May 30, 1937. The bird was a Gray-headed Junco which had been banded October 27, 1936, and had repeated October 29 and December 18, 1936. I believe that Carrizo Canyon is somewhere on the north side of the White Mountains, but do not know.

The list below includes the birds banded October 22 which were reported last month:

	<u>Oct.</u>	<u>Nov.</u>	<u>Total</u>	<u>Returns</u>	<u>Repeats</u>
Bluebird, Chestnut-backed	10	50	60	4	8
Chickadee, Mountain	1		1		
Crossbill	47	29	76	2	5
Grosbeak, Evening		2	2		
Flicker, Red-shafted		1	1		
Jay, Long-crested		1	1		
Junco, Gray-headed		1	1		
Junco, Red-backed		3	3		
Junco, Shufeldt		2	2		1
Nuthatch, Pygmy		63	63	12	30
Nuthatch, Rocky Mountain	1	3	4	2	5
Robin, Western		7	7	2	
Sapsucker, Red-naped	1		1		
Solitaire, Townsend		5	5		
Woodpecker, Lewis	4	3	7		
Woodpecker, Mearns	2	1	3		
	<u>66</u>	<u>171</u>	<u>237</u>	<u>22</u>	<u>49</u>

*****SWM*****

We might say that while Paul and Dale King were up at Aztec, they had a little sub-meeting of our forces. Present were Carroll Miller, Pete Day, Johnwill Faris, Lewis McKinney, Paul, and Dale. Some one took a picture of each of them with a 3A camera and portrait attachment. We wanted these pictures to file in the official files and the district Associated Press man wants to put them in his morgue. The prints of these particular pictures came across our desk and pretty nearly wrecked the office. They will do fine for pictures of train robbers, highwaymen or allied experts, but we will have to try again for the Park Service expression.--F. P.

*****SWM*****

EL MORRO

By Robert R. Budlong, custodian,
Ramah, New Mexico.

These be hectic days. Winter is just around the corner, and "If

EL MORRO (CONT.)

winter comes, can spring be far behind?" Echo answers, "Yes--by many months." So we are working like everything to get our cabin stocked with provisions for approximately six months. All sorts of important jobs are being undertaken getting the place ready for the winter, and the custodian and HCWP have not had a moment of spare time since our return from vacation.

VISITORS

During the travel month, 190 persons registered. Of these, all were contacted but ten who arrived during our two trips to town for supplies. One hundred thirty-three persons were taken on the 3rd guided trips. They averaged 5.5 persons per trip. Total time spent on guided trips, 2810 minutes. Average time per trip, 73.9 minutes.

We are getting the expected drop in number of visitors and in time per party. This is due, primarily, to weather. Trips start from the cabin south of the northeast point of the rock, and all is smooth sailing until we round Cape Horn (northeast corner of rock). There the cold wind hits us and few visitors have been able to remain for long on that cold north side, out of the sunlight, even though the more interesting inscriptions are located there.

The first trip of the month was a group of pupils from the Sandia School in Albuquerque. Before my departure on vacation, I had the pleasure of taking one of the teachers on a trip around the inscriptions and we discussed the possibility of making history more interesting to school children through trips around the inscriptions (one of my multitudinous hobbies). Accordingly, shortly after my return from vacation, I received a note that the pupils were on their way. They arrived late in the evening but a most enjoyable time was spent. When we get better facilities for education of large groups (through illustrated lectures, especially) I intend to devote considerable time to this sort of education.

WEATHER

This fine weather is lasting just too long. Everyone in the vicinity agrees that it is building up for an awful let-down, and we are all doing our best to get ready for a hard winter. We must purchase six months' food supplies, since snow is due at any time, and last year it remained on the ground here from the latter part of September until well into May. It was just six years ago this week that "the big snow" came, most unexpectedly, and we are taking no chances. It doesn't pay.

Nights are cold; minimum temperature to date is ten degrees above zero. Each day the clouds grow just a bit heavier and remain just a trifle longer. We had our first snow flurry the morning of November 18. Traces of it still linger on the north side of the rock.

WATER

Yes, I know! But with only two good showers all summer, the level of the water in the reservoir is growing mighty low. People come in every day to haul it away, the country nearby being bone-dry. If we don't have good heavy snows this winter, the coming summer is going to be mighty hard on everyone. Water in the pool is mostly from snow last winter, and from rains summer before last. It is growing so thick it is almost plastic.

I found a dead owl in it the other day (species undetermined). Question was, what killed him? A moment's deliberation indicated that he had merely grown careless, had taken a drink of the water, and death naturally resulted. When I fished him out of the pool, a visitor was present, also one of the local residents. Visitor remarked that there was a most pronounced odor of skunk about the owl; that it must have met with one of said skunks. The neighbor explained that that wasn't skunk--it was just the regular flavor of the water. (Is the Bureau of the Budget listening?)

The syphon line has been drained, due to low temperatures, and it is now necessary for a water hauler, when he arrives, to spend half an hour filling the pipeline in order to get it to syphon.

QUARTERS

Last year we came in here just in time to run into snow and below-freezing weather. We had no transportation, and there was no time in which to prepare for the severe winter that struck us. This year we are trying to get everything in shape for bad weather. During the month, the custodian hauled twelve truckloads of adobe earth and banked it around the cabin, to keep out drafts and to furnish insulation. If the weather holds, I expect to haul about six more loads in order to complete the job.

A cellar has been constructed during the month in the hillside back of the cabin. It is finished with the exception of some excavation to lower the floor level. The cellar is ten by twelve feet, with about seven feet headroom. The top, with two feet of earth over it, is nearly flush with the ground, and, aside from a slight mound, only the metal-sheathed door is visible. We have two doors--one at ground level; then a flight of stairs leading down a boarded-up passage to a second door, set vertically. Back of this is the cellar proper. We are stocking it with sacks of potatoes, flour, sugar, canned goods by the case, carrots, cabbages, and a thousand and one other things. This is necessary since even canned goods froze inside the shack last winter. These 40-below-zero temperatures aren't to be fooled with.

Roll roofing has been purchased; also roofing paint, nails, etc.

EL MORRO (CONT.)

This coming week, the custodian will re-roof the shack as the old roofing is in bad shape and leaking in places. Half of our wood supply needed for winter is in and the other half should arrive during the next two weeks. Windows and doors are being weatherstripped. Spaces between the logs must also be re-chinked in the next week or ten days. Our snowshoes and skis have been overhauled and made ready for winter.

INSCRIPTIONS AND STONE STEPS

During the month we received small quantities of commercial preparations called "Protolapidolith" and "Lapidolith". These are to be used on the steps which weathered away so badly last winter. One of these solutions is a commercial preparation for the hardening of concrete. Since its action is dependent upon the presence of calcium, and since there is practically none in the sandstone of The Rock, this element will be supplied by the other solution. Photographs will be taken of the trial flight of steps when these solutions have first been applied, and compared with photographs taken next summer. While this treatment is intended for the stone steps, I plan to do a little experimenting on some sandstone slabs to see just how satisfactory the hardening may be. Since our present waterproofing solution applied to the inscriptions does not harden the sandstone, and since this stone is so soft it may be eroded away merely by rubbing with the tips of the fingers, it would be advisable to find some way of hardening it. We shall know more about this by next summer.

Inscriptions are being repencilled and given their winter coating of "Driwal". This is done in our "spare time" and when all moisture is out of the rock.

GENERAL

Old Rafael came around to visit us the other day. He told me he had been pretty sick, and indeed he looked it. We surely hope he pulls through the winter. He must be about ninety years old now. Today we had a visit from his daughter and grandson.

Before much more time has passed, I hope to send you some interesting shots of some work being done on one of the inscriptions. Some of the words in it were scratched out long before the Eulate inscription was first brought to public attention and we think we are making some progress in finding them. This is slow work; more about it later.

We agree most emphatically with Lewis McKinney at Chaco that if anyone anywhere thinks some of us only sit around and hibernate during the long winters, he is invited to come up and help with the hibernation. We can promise no minutes of "spare time" and lots of work.

Incidentally, Boss, tell McKinney to send us down one of those

shovels he boasted about last month. He remarked he had leaned 195 pounds on the handle of one of 'em many times. Now, our shovels are in poor shape and the blades worn down through hard use. We don't lean on 'em; we work hard with 'em and, if Lewis can locate some good stout stick to lean upon, we'll appreciate it if he'll send us some of those shovels.

*****SWM*****

Bud, it will be well worth your while to write to E. Z. Vogt, over at Round Mountain, Nevada, for his theory about the scratching of that Eulate inscription. He has a dandy theory that the scratching occurred soon after the inscription was first put on the rock; that it was done by a disgruntled soldier who came along with some other expedition a few years later; that this soldier, probably having served under Eulate, might have become angered when he saw the fulsome praise and flattering phrases of this inscription and, saying to himself the Spanish equivalent of: "Yea, you big bowl of mush, I'll show you what I think of all this stuff!" promptly scratches out some of the flattering words. The story is so very human I wish we could prove it. Change the scene a few hundred years and let an old A.E.F. member find some proclamation on a cliff about his old Colonel referring to the "very brave and pious Colonel John Bumfighter who did, at his own expense and with his own right arm, reconquer this country, etc., etc." and I will lay you two to one that before he finishes reading the proclamation he will be reaching for his bayonet in order to improve the inscription just as that other soldier may have done.--F. P.

*****SWM*****

NATURAL BRIDGES

By Zeke Johnson, custodian,
Blanding, Utah.

I locked up both tent-houses and put a big prop under each bridge, so they would not fall in while I was gone, then reluctantly drove away. It makes me feel lonesome when I think about leaving. I did not stay out there any longer for it is black and looks like snow. I did not want to take any risk of getting snowed in out there with my car.

During November I did a lot of repair work on the trails and cleaned up the ruins as best I could. They look a lot better to me now, and I will be very pleased to show them to all who come. They are certainly a delight to everyone who sees them; so different from all others in the country.

The weather has been ideal all the month. There was a very nice rain on November 16, so grass is still growing and flowers are in bloom.

During the month, we had 38 visitors and I contacted all of them. I spent 24 hours in hiking with five parties. I gave no lectures, but

NATURAL BRIDGES (CONT.)

spent 360 minutes talking about the monument and many hours visiting around the campfire and in my tent.

I was pleased to have Custodian Harry Reed from Arches National Monument, also his partner J. H. McGibbeny, a photographer from the Salt Lake City Chamber of Commerce, with me for one day. I spent one evening with the following gentlemen, made the nine mile hike with them, and started them off down White Canyon for the Colorado River at Hight Crossing: T. H. McDonald of Washington, D. C., L. I. Huer of San Francisco, and George Abbot and Preston Peterson of Salt Lake City. There were four others sent by the Governor to look over the proposed route that will hook up Mesa Verde National Park and Zion National Park. I am enclosing clippings telling more about them and what is being done.

Well, Boss, I think I have had a very good year at The Bridges, and I am well pleased and wish I could have done better but I am in hopes that I can be back on the job early in the spring and find everything OK out there. I wish I could stay out there all winter. If this proposed road goes through, I will stay out at the Bridges all year--that would suit me fine.

I expect that I will soon be going up to Salt Lake City to stay for a few months, but I would much rather have a job of work somewhere. I sure don't like to loaf all winter for "winter consumes all that summer doth yield", so says the old song.

Well, here's wishing you all the Joys of the Thanksgiving Season. I will keep you posted each month what I am doing.

I had to make hot biscuits in the Dutch oven for all that road gang for both supper and breakfast. There were 13 of them. They had a big truck and three autos that went back from The Bridges.

*****SWM*****

We are very glad to hear that Zeke's bridges are put to bed for the winter and that he did not get caught west of the Bear's Ears by the first big snow.

If that proposed road goes through, it will be necessary to keep a Custodian on the job the year 'round out there for both game and ruins protection. In a way I shall hate to see a through road go down through that lovely country, but there is one satisfaction; it will have to be a through road only and there won't be any driving north or south off of it into the local country.--F. P.

*****SWM*****

AZTEC RUINS

By T. C. Miller, custodian,
Aztec, New Mexico.

GENERAL

November has been a normal month for northwestern New Mexico with bright sunny days, cold nights, and an all-time high travel record for the month of November.

An official trip was made to headquarters during the month. I left Aztec Ruins on the afternoon of the 27th. and returned November 2. The weather was fine and the trip was made by the way of Chaco Canyon, Petrified Forest, and Walnut Canyon National Monuments. We feel that we had all too short visits at all those places, including Casa Grande and the good eats at Mother Pinkley's. However, I feel that much was accomplished on the trip and it was a great pleasure to talk over our many problems in the field with the Boss. Every trip that I make to headquarters makes me more anxious to return the next year and, Boss, if you don't want me there once a year you had better let me know months ahead of time, because I'll be there next year if I possibly can.

WEATHER STATISTICS

Maximum temperature-	- - - - -	-75° (Oct. 26 & 27)
Minimum temperature-	- - - - -	-16° (Nov. 16)
Total precipitation-	- - - - -	.09 inch (Nov. 7)
Number of clear days	- - - - -	-24
Number of cloudy days-	- - - - -	-3
Number of partly cloudy days-	- - - - -	-4
Mean maximum temperature	- - - - -	-63.2°
Mean minimum temperature	- - - - -	-27.7°

TRAVEL STATISTICS

Total travel	- - - - -	771
Total contacts	- - - - -	-1,276
Number of field trips-	- - - - -	109 with 611 persons
Number of museum talks	- - - - -	135 with 613 persons
Number of special groups	- - - - -	23 with 53 persons
Total guide time in field-	- - - - -	-3,170 minutes
Total guide time in museum	- - - - -	-2,695 minutes
Total guide time special	- - - - -	-360 minutes
*Total guide time at monument	- - - - -	-6,118 minutes
Total visitor time at monument	- - - - -	-8,435 minutes
Average length of field trips-	- - - - -	29.08 minutes
Average length of museum contact	- - - - -	19.96 minutes

*The total guide time at monument is less than the sum of the preceding three figures because of the method of recording time for individual groups.

AZTEC (CONT.)

The above figures show that we have had a good month with an increase of 117 people over the corresponding period last year and an all-time record for November. Of the 771 individuals who entered the monument during the month, only 54, or seven per cent, were not contacted. Of this number, 32 merely used the parking area as a turn-around with no idea of actually visiting the monument, eleven used other monument facilities, and the remaining eleven registered when there was no one at the museum to meet them, and left before our return. So, although our contacts show only 165 per cent out of a possible 200 per cent, we actually contacted 93 per cent of our visitors.

Geographically our visitors show great variety. In addition to 27 states and the District of Columbia, the following countries were represented: Netherland East Indies, India, Sweden, Panama, Porto Rico, and Canada.

NATIONAL PARK SERVICE VISITORS

Lewis McKinney and Eli and Jewel Baker of Chaco Canyon.

Johnwill Faris was spending part of his annual leave in the vicinity and was a frequent visitor.

Dale King and Paul Beaubien were here on November 16.

SPECIAL VISITORS

Dr. and Mrs. E. A. Kreiben of Semarang, Java, were guests on November 21. They were greatly interested in the monument and several times made remarks praising the work of the National Park Service in this and other areas they have visited.

ROADS

The entrance road from U. S. 550 to the monument headquarters has been graded and gravelled. This work began on the twentieth and was completed on the twenty-second. This work was financed by the State Highway Department and the gravel was applied by the Allison Construction Company. We wish to thank the State of New Mexico for this splendid road.

MONUMENT INSPECTIONS

Trips were made to Chaco under dates of October 27 and November 12 and 13. I met with District Engineer Diehl and Assistant Engineer Tovrea on the 13th. to discuss the different problems with the Mobile Unit. These engineers gave us some mighty good ideas about ruins repair that we will be trying soon.

Hovenwéep and Yucca House National Monuments were inspected on the nineteenth. The weather was fine around those northern monuments.

AZTEC (CONT.)

At Hovenweep I found tracks of only one car. This car was being driven by some local person that knew how to find all the different groups of ruins. However, the car was far enough ahead of me that I never did get to contact it. At Yucca House, Mr. Ismay reports four cars of visitors during the month. The Russian thistles are so high around Yucca House that few visitors explore the ruins.

*****SWM*****

Our compliments to Carrol and Pete for the time and care they put in this month on visitor statistics and the workman-like report they got out of them.

We might say, on behalf of the headquarters crew, that it was as fine for us to have Carrol come in and talk things over as it was for him. We look forward to the time when we can all get together once a year at some nearly central point and have a general washing up of all the things which make the life of a custodian pleasant or unpleasant as the case may be. Such meetings would be great morale builders and enthusiasm maintainers.--F. P.

*****SWM*****

MONTEZUMA CASTLE

By Earl Jackson, custodian,
Camp Verde, Arizona.

STATISTICAL

Visitors: - - - - -	705
Arizona by cars - - - - -	437
California by cars- - - - -	138
Total states- - - - -	27
Foreign countries - - - - -	7
Conveyance:	
Cars- - - - -	175
Horseback - - - - -	3
On foot - - - - -	1
Contacts:	
Guided field trips- - - - -	106
Attendance- - - - -	650
Trips through Castle- - - - -	101
Those who climbed ladders - - - - -	423 - 58.58% of total on trips.
Average persons per trip party* - - -	6.13
Average persons per trip group**- - -	4.57
Average trip time per party - - - - -	49.89 minutes
*Party means total persons on part or all of a trip.	
**Groups are natural arrival units of a party.	

MONTEZUMA CASTLE (CONT.)

Museum talks - - - - -	99
Attendance - - - - -	511
Average persons per talk party - - - - -	5.16
Average persons per talk group - - - - -	4.05
Average talk time per party- - - - -	18.94 minutes.
Average talk time per group- - - - -	14.38 minutes.
Special Guide trips- - - - -	7
Attendance - - - - -	60
Average party and group time - - - - -	33 minutes.
Unguided Trips - - - - -	126
Persons- - - - -	519
Average unguided trip time - - - - -	24.08 minutes.
Average actual guide and lecture time- - - - -	50.61 minutes.
Average group minutes in monument- - - - -	97.16 minutes.

WEATHER AND ROADS

Weather has been quite dry. There were two cloudy days and three partly cloudy during the month, and .03 inch of rain fell on November 7. A number of days have started out to be cloudy but have speedily given up the ghost in early morning. On November 4 and November 21, this valley looked like the Rio Grande Valley after a dust storm. Sulphur smoke came down the valley from the Clarkdale smelter so thick we could not see the mountains, and it was so thick we could taste it.

Entrance roads are in good condition, save that they are rough from corrugations. I am pleased to report the beginning of a county WPA project to improve the road by Cornville from its junction with Highway 79 to within two miles of Beaver Creek. That will be to within four miles of here. The project is really to make a new road, 24 feet wide, taking out all the old bad curves. Now if we could only get the bad curves on that four mile stretch between the Beaver Creek crossing and the Castle straightened out, we really would be getting fixed up.

SPECIAL VISITORS

Park Service: November 2 - Andy and Ven Clarke arrived for the road survey job. The Clarkes remained until November 10. Come again, folks!

November 12 - "Jack" Diehl, regional engineer, and J. H. Tovrea, assistant engineer, were in for an inspection trip. Wish they could have visited a while too.

Other Visitors: October 31 - Mr. and Mrs. M. L. Lyle were in. Mr. Lyle is vice president of the Santa Fe Railroad.

Frances Gillmor, of the University of Arizona staff, was an interested visitor. Miss Gillmor is well known as a novelist.

Educational Advisor P. H. Zeugner, of CCC camp F-35, was in with 49 CCC boys.

November 6 - Lieutenant H. C. Baldwin, of CCC Camp F-35, was in

MONTEZUMA CASTLE (CONT.)

November 7 - Educational Advisor O. M. Ray, of CCC camp F-32-A, was in with 46 CCC boys.

November 13 - Senior Laborer S. B. Kirkendall of CCC camp F-35, was in with 49 CCC boys.

IMPROVEMENTS

Five new enameled road signs were posted on Highway 79 and two were posted on the new Beaver Creek road near Sedona.

Thirty no-hunting signs were made and painted for placement on the monument boundaries.

Ranger Jennings re-mudded and re-faced several sections of old repair work on the walls of Montezuma Castle.

CONSTRUCTION

The revetment repair job was completed in good shape and passed inspection by the engineering office.

Alteration was made in one of our old make-shift museum cases and an attractive new exhibit installed.

ACCESSIONS

One metal-covered herbarium case was received from the Berkeley offices.

NATURE NOTES

A package of plant specimens was sent to Headquarters for identification.

A peculiar beetle, which has not been seen before by the custodian, was found not far from the monument by a CCC enrollee and was sent to Headquarters for identification so that we can place it in our new insect case.

On the night of November 3, a medium sized raccoon walked around our parking area and then on out without seeing the Castle. We suppose he decided it was too late for a guided trip.

The latest snake seen here this year was a young bullsnake (Pituophis sayi) on November 2.

On November 18, we found a large lizard in the house, peacefully dozing. We built a cage for him and stationed it in a sunny south window. He or she is a fine specimen of the Clarke Swift (Sceloporus

MONTENZUMA CASTLE (CONT.)

clarkii).

For a long time I thought there were only two beehives on the monument. One of these is on the east side of the Castle, quite near it, and one is on the west side, also quite near. But on November 13 a CCC enrollee found a new hive low down in the cliff at the lower end of the Castle grounds.

It was found necessary to dispatch a couple of house cats which somebody had turned loose on the monument and which were eating up our wild life.

For Bird Notes, see Betty Jackson's report.

GENERAL

It has been quite a satisfactory month from this angle. Our new museum exhibit consists of a male and female skull and a male and female pelvis. Jane Jennings has made captions for these specimens, for the purpose of pointing out the sexual differences which we wished to show. In the bottom of the same exhibit is a pelvic bone and sacrum with an arthritic sacro-iliac joint and several badly diseased (arthritic) vertebrae from one spine. The exhibit has only been in a few days, but is attracting much interest. The background of the panel is painted in a light green, and the color attracts attention first and then visitors get enthused over the specimens.

Jess Jennings and I are confederated on the statistical layout for this month. It only took us four hours working together to get the figures worked out. What we need is an adding machine. I believe the new contact sheet is a definite improvement over the old one, but it still gives a little difficulty on one or two points. These can best be discussed the next time I get a chance to visit Headquarters.

*****SWM*****

We want to compliment Messrs. Jackson and Jennings for the way they have worked on the revised form of SWM 16 and the wealth of visitor information they have furnished us. We know well enough it is no picnic to keep this form and work up the figures. Probably the hardest test of the form and the place it gives the most trouble is right here at Casa Grande, under our eye so to speak, where we have all kinds of overlapping parties, picnickers who stay indefinitely, run-arounds who do not stop at all, and all the other variations that can happen. We ask the men on the job to remember that we are not married to this revision of the form, and if they have any suggestions for further revision we will be glad to hear them.--F. P.

*****SWM*****

BIRDS AT MONTEZUMA CASTLE

By Betty Jackson

Six new birds have arrived this month. They are: A Road-runner whose tracks were seen October 24, but who was not seen in person until the 27th; an American Raven seen flying over on October 31 and Nov. 17; several Western Robins which arrived Nov. 10 and are still here; a Gambel Sparrow that arrived on the 17th; an Oregon Junco, and possibly some of the other juncos, which arrived Nov. 20; and a Western Warbling Vireo. This last has been here since last month, but nobody got near enough to identify him till I saw him November 21 very close. It is only a tentative identification, however, till I've seen a skin at Flagstaff because the tail does not fit Bailey's description perfectly.

Our total of birds seen this month is 25, as follows:

Chestnut-backed Bluebirds	Arizona Cardinals
Mourning Doves	Duck sp. (Canvasback?)
House Finches	Red-shafted Flickers
Cooper Hawks - a pair	Killdeer
Treganza Blue Heron	Oregon Juncos
Ashy Ruby Crowned Kinglets	Belted Kingfishers
Gambel Quail	American Ravens
Road-runners - a pair	Western Robins
Red-naped Sapsucker	Gambel Sparrows
Western Chipping Sparrows	Crissal Thrasher
Western Warbling Vireo (tent.)	Turkey Vulture
Cactus Woodpecker - at least one pair	Gila Woodpecker
Canyon Wren	

There is also an Owl here, as usual, but no one has been able to see him.

We were interested to see the road-runners chasing one another in the tops of mesquite bushes instead of on the ground where one sees them most often.

A sapsucker has completely ringed one sycamore with his holes. I suppose you know that besides eating the inner bark of trees, a Sapsucker uses his holes as bait for small insects. The insects are drawn by the oozing sap, get stuck in it, and are then lapped up by the clever bird.

*****SWM*****

TONTO

By Tom Onstott, ranger in
charge, Roosevelt, Ariz.

The end of this month brings us glad tidings as far as the monument's nightmare, the road, is concerned. As the worst places are now filled and surfacing has been put on the spots which needed it most,

TIONTO (CONT.)

the road is now in fair shape to be bladed. Here is where the good news comes in. Two of the state highway workers have volunteered to do the work on their own time. I feel confident that within the next few days the road will be graded and will be in plenty good enough shape for the Arizona Motor Tour's bus to run over it with no disastrous results.

This month there have been a good many more visitors than last. A very close estimate of 350 persons will cover the travel.

Sunday, November 14, Mr. Detloft, the educational advisor for the A Cross CCC Camp, and 57 enrollees were here.

Monday, November 22, Mr. A. B. Drury of the California State Park Service visited here with his wife and her mother, Mrs. H. K. Schilling.

That covers the situation here, Boss, and as soon as we blade the road, I'll bring back the borrowed truck.

*****SWM*****

ARCHES

By Harry Reed, custodian,
Moab, Utah.

VISITORS

This month started off with a bang, or perhaps I should say last month closed with a bang. On Sunday, October 31, I conducted a party of 27 through the monument. As we were returning, we met five cars; one from Moab, two from Colorado, and two from California. The occupants of these cars totaled 28, bringing the total number of visitors for the day to 55. A careful checkup indicates a total of 106 visitors for the month.

SPECIAL VISITORS

Dr. H. T. Plumb, engineer, General Electric Company, Salt Lake City, Utah.

T. S. Morris, landscape engineer, Utah State Road Commission, Salt Lake City, Utah.

WEATHER AND ROADS

Weather conditions have been ideal for hiking. Several persons have taken advantage of the fine weather to make the hike into Court house Towers. Trails and roads are in better condition than at any time this year. Rains which fell early in the month packed the sand and topsoil. Although there has been an increase in the number of cars going into the monument, no one has had the misfortune of getting stuck and all visitors which I have contacted report a very pleasant trip.

ARCHES (CONT.)

On Saturday, November 13, J. H. McGivveny of the Salt Lake City Chamber of Commerce and I had our first visit to the Natural Bridges. We found Zeke just recovering from a slight illness. Although he was not feeling his best, he accompanied us to the Owachomo and Sipapu bridges. As we were limited for time, we did not see the Kachina. The scenic drive out from Blanding, the graceful lines of the Owachomo, the magnificent size of the Sipapu, the good condition of the trails and Zeke's unique way of showing and explaining the many features makes the trip to Natural Bridges National Monument most interesting and educational.

Friday, November 19, Jesse L. Nusbaum, Superintendent of Mesa Verde National Park, arrived in Moab late in the evening. The following day Dr. J. W. Williams and I accompanied him to the "Big Flat" to make photographs of the Colorado River canyon. Superintendent Nusbaum departed Sunday morning (November 21) for Mesa Verde.

*****SWM*****

We might say here, for the benefit of the record, that we had a mighty nice letter from Mr. and Mrs. Harrington, of Denver, who are the people Harry dug out of the sand and spoke of in his report last month. They were loud in their praise of the Custodian.

We are glad, too, that Harry got down to see Zeke's bridges. That is a wonderful trip; that grand view off the Bear's Ears; those wonderful bridges; and then of course, there's meeting Zeke which is worth going several hundred miles in itself.--F. P.

*****SWM*****

PIPE SPRING

By Leonard Heaton, acting
custodian, Moccasin, Ariz.

I have spent so much time outside working on projects and jobs (listed below) that I have about forgotten how to make out my report and have just kept up the office work that was necessary this past month.

CCC NOTES

There are several projects I want to get finished up before bad weather sets in, which is one of the reasons that I have let the paper work go. Another is that I have not been able to secure from the camp any satisfactory answer to requests for materials, truck or help. Without materials or a truck, the boys are of little use for the work on the monument.

I have a feeling that the CCC is loosening up a bit from the way Mr. Draper spoke the other day. He called me into his office and told

PIPE SPRING (CONT.)

me that the materials for the garage were in and that, now that the Bull-rush Bridge was about complete, he might be able to let us have a truck for a week or two.

On November 19, Mr. Draper sent up a boy to help me with the garage and we got the lumber and materials and have been at work on the remodeling of the north end of the barn. I hope to have the garage finished up next week. Besides the carpenter work, we have to find some materials for the floor. I think I shall put in a rock floor in place of the sand that is there now. The sand is so deep that it would be difficult to get out with the truck.

GAS HOUSE

When Al. Huehl was in the last time, we decided that there must be a house separate from the garage in which to store the gas. We selected a spot about 40 feet north of the garage for the house. The building is to be about six feet by seven feet and seven feet high, built of rock and cement. It is to be set in the sand bank so that the roof will not show over the brush and be out of sight as much as possible. I would like to make the roof of cedar poles, bark, and dirt.

I started the gas house November 9 and finished it, except the door, November 19. This building also needs rock on the floor which I shall get when we get the rock for the garage.

CAMP GROUNDS

I have planed and painted two more tables this month. Have had some of the cottonwood cut and split up for camp use, and intend to get some cedar posts to make places for picking up the firewood near each fireplace and still have it back out of the way and out of sight as much as possible.

I have most of the iron collected for the making of the fireplace grills, and the JCC blacksmith is working on them.

I have clayed about 50 feet of the sandy ditches and want to clay about 150 feet more this winter.

MONUMENT IN GENERAL

The place is in a fair condition. Most of the leaves have fallen and are filling up the ditches and buildings, and every place the wind can blow them.

On October 26 and November 15, I planted about 5 pounds of grass seed, collected on the monument, and 25 pounds of greasewood seed on the southeast quarter of the monument which has in the past been farmed.

PIPE SPRING (CONT.)

I want to get a lot more seed planted on the bare spots this fall.

VISITORS

I have had as visitors this month Al Kuehl who was here for some two or three hours on November 2 getting dope on the new residence area south of the meadow, garage, and gas house, and planting of more trees.

Mr. A. E. Borrell, wildlife technician, and Ranger Hamilton of Grand Canyon November 21. They came in late Saturday evening and stayed at the camp and then spent an hour with me at the monument. I got several good pointers on wild life while they were here.

Mr. Christianson of Zion Park, working under Dr. H. Gregory, U. S. geologist, came in to get some more dope on the formation around the monument. Mr. Christianson was here for three days and camped in the new camp area.

Using the new instructions on the way to count visitors and people that come to the monument, I have the following to report:

Visitors to the fort, guided-	14
Visitors to the fort, unguided-	40
Campers -	4
Picnickers-	6
Lecture to CCC boys -	-120
TOTAL-	-184

I have found it is going to be a lot of guessing on my part to get the time that unguided parties stay on the monument.

BIRD NOTES

I put out my traps and have caught the following birds:

	New	Repeats
Gambel Sparrows	77	7
Song Sparrow	6	13

I have two returns; No. 36-15150 banded April 2, 1936, and No. 35-22737 banded April 3, 1936. I feel this is a good start since I have been spending most of my time at other projects.

On the fifth I went to Cedar City, Utah, and had the pick-up serviced by the Ford Company and got the herbarium case. As yet I have not done anything with the plants that I have collected.

PIPE SPRING (CONT.)

WEATHER

We have had some storm threats but none came. There have been a few storms north of us. There has been ice most of the mornings, but the days have been rather pleasant and warm.

Days Cloudy- - - - - 4
Days Partly Cloudy - - - - - 4
Days Clear - - - - - 22

IN CLOSING

I feel that the above report covers the monument fairly well and that I am getting along better this month than I did last month, but there is a lot to be done before snow flies. I must confess that I feel a lot better in every way when I have some good hard work to do physically and hope that I can keep some lined up all winter. I don't want to be sent up for the doctors to see how much they can take out and still keep me alive as I thought would be the case last spring. That is one reason that I have not been so anxious to have the CCC boys working on the monument when we have no materials or truck. I want some of the work left for me. I intend to keep some of it for myself just for health measures if nothing else. Again, my appointment is for a laborer and I want to fill the appointment the best I can.

*****SWM*****

This all sounds like things are going along all right up at Pipe Spring and I think Leonard will not get too lonesome this winter.

We picked the following item out of the Phoenix paper:

RESIDENT OF ARIZONA SINCE 1865 SUCCUMBS

"TEMPE, Nov. 23.--S. A. Winsor, resident of Arizona since 1865, died at 7 o'clock yesterday morning at his home on West Eighth street.

"Mr. Winsor was born in Provo, Utah, January 20, 1857. With his parents he came to the Territory of Arizona in 1865, settling at Winsor Castle, now known as Pipe Spring, a national monument.

"In 1877, he was married to Ella Westover in the Latter Day Saints temple at St. George, Utah. The return trip was made with an ox team, crossing the Colorado river at Lee's Ferry on the ice. The couple located at Taylor, in the White mountains, where there were but a few white men and the Apaches were still on the warpath.

"Mr. Winsor was one of the pioneers who helped haul a part of Geronimo's tribe to the railroad, where they were placed in charge of the United States government and shipped out of the state.

"Mr. Winsor first came to the Salt River valley in 1895,

PIPE SPRING (CONT.)

locating near Mesa, and a year ago moved to Tempe from a ranch southeast of Tempe, where he had lived for 30 years.

"Surviving are his wife, Mrs. Ella Winsor, a son, A. L. Winsor, Tempe, and three daughters, Mrs. Ralph L. McDonald, Tempe; Mrs. Fred Martin, Out Bank, Montana; and Mrs. Charles Irving, Phoenix; two brothers, Frank and Andres, St. George, Utah, and a sister, Mrs. Nettie Acay, Los Angeles; 17 grandchildren and six great grandchildren.

"Funeral arrangements have not been completed." -- F. P.

*****SWM*****

WUPATKI

By David J. Jones, ranger in charge,
Flagstaff, Arizona.

VISITOR TRAVEL

Seventy-one visitors registered at Wupatki and 40 at the Citadel. Of these, 21 were duplicates which makes the total travel 90 for this month as compared to 107 in 1936. Six states and England were represented.

WEATHER

In general, it has been quite dry with no precipitation and a good deal of wind.

Days clear- - - - -	27
Days partly cloudy- - - - -	3
Maximum temperature-- - - - -	76
Minimum temperature - - - - -	32
Average maximum - - - - -	61.7
Average minimum - - - - -	39.2
Anemometer reading for month- - - - -	-3417.2 miles.

ROADS

The roads to the monument are quite rough and the dry weather makes the cinder-covered portions somewhat dangerous for the inexperienced driver. For this reason, I have advised most of the visitors against taking the road between here and Sunset Crater.

Oiling of Highway 89 is almost completed. With a fine highway alongside the monument, we should have a greater number of visitors next summer.

MAINTENANCE

I spent two days on the trails, filling in where necessary and widening at the southeast corner of the ruin. Before snow falls, I

WUPATKI (CONT.)

am going to put a dirt cover on all the trails to remove the marks of erosion. By next summer this ought to be well packed. I also spent several days repainting the directional signs around the ruin and putting a new roof on the cook shack.

VISITORS

Katherine Bartlett and Mrs. Walter Taylor were here on the 28th. to have squaw dresses made by Sally Peshlakai.

Erik Reed was in on the fifteenth to get the sherds taken from Room 7. They are now stored at the Museum of Northern Arizona.

A. C. Kuehl and Charles A. Richey arrived on the 17th. They came shortly after I left for Flagstaff to meet Dale.

A Forest Service party consisting of O. L. McClure, E. Geffert, and V. O. Harris came in November 8.

VANDALISM

There have been numerous hunters around during the last month as evidenced by some of the directional signs. One sign at the crater. and two on the road to Wupatki were damaged considerably. A shotgun certainly plays havoc with the enameled signs.

GENERAL

For the past month, I have been collecting animal bones from the dump heaps at Wupatki for Lyndon Hargrave of the Museum of Northern Arizona. He is making a study of the bird life as evidenced in the prehistoric pueblos, and plans to publish a paper this winter on the information which he has been able to glean about the prehistoric peoples from a study of the animal bones.

Erik and I were talking about the ball court here at Wupatki. He would like to excavate it, and nothing would please me more than to be able to tell the visitors about it. We do not have one at any of the monuments and, with this one so close at hand, Wupatki would be an ideal place to tell them about it.

With the highway in fine shape, visitors travel faster than ever. I have watched them at the entrance several times. Most of the drivers are so intent on the road that they miss our entrance signs entirely, unless they already have intentions of stopping. Sometimes they will come back to look at the signs, but not often. This indicates that our signs are not conspicuous enough. It is my opinion that they should be somewhat larger and of a different type.

Among the additions to the monument library are: "Life Histories
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WUPATKI (CONT.)

of the North American Birds of Prey" by A. C. Bent, the Master Key, and a detailed map of the Navajo reservation.

This next month will be a live one for Wupatki. Already the Navajos are asking about the Christmas party. It will be held on the 16th--open invitation. Among the things I intend to do before leaving are: complete the plans for the shrine exhibits at the crater, finish repainting the directional signs on the monument, and replant the fill at the southeastern corner of the ruin with native flora to check erosion.

*****SWM*****

SUNSET CRATER

By David J. Jones, ranger in charge, Flagstaff, Arizona.

VISITOR TRAVEL

One hundred eighty three visitors registered at Sunset Crater during the month as compared to 205 in November, 1936.

During the month I repainted the signs at the various points of interest putting on plenty of varnish to protect them from the snow. I have had several complaints about the sign at the foot of the crater. It states that there is a trail leading up to the top and that the trip can be made in one hour. Thinking that the road to Wupatki is the trail, the visitors often end up down here. I guess the only thing to do is to put up a small trail sign alongside this sign.

I pulled two parties out of the cinders during the month. They had tried to turn around at the wrong place.

*****SWM*****

I agree with David that it would be fine if we could get the ball court at Wupatki opened for study and to show to visitors. We must, however, be sure we have protection money enough to take care of it before we allow it to be opened. We have been holding one of these courts at Casa Grande in status quo for many years awaiting an expedition with enough funds to open and protect it but thus far have not been able to work up enough interest to get the job done.

David is correct about the need of a trail sign at Sunset Crater. As we all know, if there is any chance of misunderstanding a sign, you will have a few visitors who will do so. Write us a special letter about this and we will have the sign made at one of the CCC camps.

We note that David's average field-trip time drops from 36.5 minutes last month to 29.5 minutes this month. The museum-talk time holds at 19.0 minutes as against 19.6 last month. I wonder if this

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SUNSET CRATER (CONT.)

means that the weather is getting colder and the days are getting shorter and the visitor is cutting the field trip a little, but that within the protection of walls and under Davey's siren voice he still yields the 19.0 minutes for the museum talk? -- F. P.

*****SWM*****

CASA GRANDE

By A. T. Bicknell, custodian,
Coolidge, Arizona.

WEATHER STATISTICS

Days clear- - - - -22
Days partly cloudy- - - - -6
Days cloudy - - - - -3
Maximum Temperature - - - - -98 on October 27.
Mean Maximum Temperature- - -85.7
Minimum Temperature - - - - -31 on November 14 and 16.
Mean Minimum Temperature- - -42.5
Precipitation - - - - -None

The weather during the month was fairly normal except for the absence of rainfall. We normally expect about a half inch of precipitation during this period. The day temperatures were just a trifle higher than normal but the nights were normal. Two nights the temperature dropped to 31 degrees. Ordinarily November sees considerable wind, but this past month we have been fortunate in having only one windy day which was on the 23rd.

GENERAL

Travel this month has been steady with a total of 2664 visitors. This figure is an increase of 182 over that of last month but it is a decrease of 245 under that of the same month last year. The month started out as though it was going to break all records but around the middle of the month travel slackened perceptibly. Visitors were of a high type and the guide work was more enjoyable than it has been during the summer months.

More Eastern visitors can be noted on the register than in previous months. Visitors came from 42 states, Washington, D. C., Alaska, Hawaii, and six foreign countries, namely: Canada, Mexico, England, Argentina, China, and France. Arizona accounted for about 50% of the visitors, California followed with 16%, Texas with 4%, Oklahoma with 3%, and Ohio with 2%. Other states recording more than 20 visitors were, in order: Illinois, New York, Michigan, Kansas, Colorado, Pennsylvania, Oregon, Indiana, Missouri, Minnesota, and Washington.

On November 19, Junior Park Naturalist Dodge noticed smoke coming

CASA GRANDE (CONT.)

from in back of the museum. Upon investigating, he found a salt bush blazing merrily, apparently ignited by a carelessly discarded cigarette. The fire was quickly extinguished by Park Naturalist King with no damage resulting except the loss of one salt bush.

With the arrival on November 16 of 24 enrollees and one foreman, Ottis Dale, our CCC side camp activities began. A temporary camp was set up using tents as barracks and a 1000 foot water line was run to the campsite from the monument supply tanks. Work began immediately on the construction of the permanent building. At this writing the floor and walls of the building are complete and the roof is more than half finished. At odd times, work was begun on a permanent cess pool for the camp. On November 22, two of the enrollees, John Cocks and James Rogers, began learning the duties of a Casa Grande guide in order that they may be able to assist the Park Service staff in the busy winter months. The boys are learning rapidly and will be of great assistance in this under-staffed monument.

Activities of General Mechanic Eugene Stonehocker during the month included: completion of the grease rack started last month; completed repairs on the sewer pump, out of order at report time last month; construction of racks for oil barrels; construction of a tool post assembly for a lathe; installation of a new motor block in Chevrolet #8114; and general maintenance work on the other automotive equipment.

Other improvements and maintenance work accomplished during the month included; repainting of the "danger" signs on the sub-station; patching plaster and calcimining one room in Park Naturalist King's quarters; setting up stoves in all quarters; and cutting stove-pipe holes in the Miller and bachelor quarters. Received during the month were a boring bar and motor testing equipment from the Federal Housing Administration surplus stock.

USE OF MONUMENT FACILITIES BY THE PUBLIC

Total travel: 1937--2664; 1936--2909; 1935--2165; 1934--2389.

Of the 2664 visitors to the monument, 2461 were contacted on trips through either the ruins or the museum or both.

The picnic grounds continue popular but with the cooler evenings more of the picnicking is done during the day. The only large evening picnic occurred on November 13 when the Park Service gang held a get-together in honor of the new Mrs. Charlie Steen, formerly Mary Onstott, and as a sort of farewell party for Don. and Marie Erskine who are leaving shortly for Boulder City, Nevada, where Don is to be a Junior Park Naturalist.

Several large parties visited the monument, among them a group of

CASA GRANDE (CONT.)

40 children from the Coolidge Grammar School, 24 high school students from Tolleson, 24 from Prescott High School, and 44 members of the University of Arizona freshman football team.

NEWSWORTHY VISITORS

National Park Service visitors for Headquarters included: Project Superintendent Bill Stevenson from Chiricahua National Monument; Associate Landscape Architect Lyle Bennett; Regional Archeologist Eric Reed; Regional Engineer Jack Diehl; State Supervisor Frank Russell of the State Recreation Study; State CCC Inspector Jack Haile; and Regional Wildlife Technician Adrey Borrell. Park Service visitors to the monument included Ranger Lon Garrison and family from Yosemite National Park; and District Forester Ward Yeager.

Other newsworthy visitors to the monument were Carlos Vierra from Santa Fe, New Mexico; Harold G. Clark, secretary to Congressman Murdock; Postmaster R. B. Montgomery from Sequoia National Park; Irwin Hayden, archeologist who excavated Compound F; and Jack Whitehead from the Arboretum at Superior.

NATURE NOTES

A large barrel cactus in front of the Administration Building which has appeared to be ailing for some time was examined by Jack Whitehead from the Boyce Thompson Arboretum, and pronounced dead. We had just begun to notice it because of the odor due to decay.

CONCLUSION

The report would not be complete without mention of a remark made by a young visitor. This youngster about five years old was overheard in the rest room to say, "Boy, those Indians sure had swell bathrooms".

*****SWM*****

We are mighty sorry to have Don and Marie transfer to Boulder but agree with them that a raise in salary and a change to a little more congenial work is not to be sneezed at. And so the best thing we can do is to wish them God-speed and the best luck in the world on the new job. You are getting a pair to draw to, Guy. Bob Rose knew where to come when he wanted his job handled right.--F. P.

*****SWM*****

GILA CLIFF DWELLINGS

By Frank Pinkley, Superintendent,
Coolidge, Arizona.

The Gila Cliff Dwellings, as you know, have no one in direct charge. We have not thus far been able to set up any funds for this monument,

GILA CLIFF DWELLINGS (CONT.)

apparently because it is so far in the back country and has so few visitors. Recently an expedition made an entrada into that part of the country and incidentally made a report on the condition of the monument. These reports, for there were several persons in the expedition and at least three or four reports were made on the ruins, are in your files and can be called up at any time for examination. In part, these reports need correction and we might read them a few months or years from now with a little better perspective. For instance, a couple of these men were quite concerned with a large section of wall which they thought, and I believe were told by a local man, had fallen during the last few months. After the reports were all filed, some one happened on Dr. Walter Hough's pictures of the ruin which show that wall in just that condition thirty-five or forty years ago. We knew of those pictures and knew the walls needed some repairs in order to stabilize them. The fly in the ointment is that we have no funds.

One or two of the reports suggest, as a very simple matter, that we move the Mobile Unit (the CCC stabilization camp of 24 Navajo Indians which is working at Chaco) down to the Gila Cliff Dwellings and fix these walls. The trouble with this solution is that the Mobile Unit is right in the middle of three acres of falling walls in Pueblo Bonito with six or eight acres of falling walls in the other main ruins of Chaco Canyon awaiting attention. It just isn't good business to pull the unit out and send it several hundred miles across the state at an expense of a hundred dollars per working day to fix some fourth-rate walls when it has all the first class walls it can work on for a year or two in the Chaco. Neither can we detach a part of the Mobile Unit and send a small crew over because, due to the trials and tribulations of appointments, we have, after three or more months of hard work on our part, been unable to get the two foremen positions filled at the same time, so we have only one white man in charge of the crew and it therefore cannot be divided.

I mention these things just to show that there is generally some reason when we don't do things at once when a need arises or don't do them in what looks like the very simple way; there is generally a catch to it if it looks simple and we haven't done it.

We will probably be able to fence the cows out of the ruin this winter, but the stabilization of the ruins will have to wait a little longer.

*****SWM*****

CHACO CANYON

By Lewis T. McKinney, custodian,
Chaco Canyon, New Mexico.

Another thirty days has passed, and Old Man Winter is still creeping up on us with a minimum of 16 degrees and a maximum of 79. But I

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CHACO CANYON (CONT.)

had rather see the red in the minimum standing at 16 above than at 16 or 24 below as it was last winter, though not hardly this early. Almost everyone in the canyon is building boxes and covering up the water pipes. I have been doing some work on my water lines also and I have begun to look for my old water barrel because I know I will need it before long.

Yesterday Major R. G. Ayers, Major J. A. Chase, and Dr. Lake O. Gill, all of Santa Fe, New Mexico, were in the canyon to spend a day and two nights. Their visit was certainly enjoyed by the custodian, but their departure wasn't so hot as they left all the ice they had in their trailer-house ice box with Mr. Baker who is in charge of the work here at present for the School of American Research. We have enough ice here in the winter without any one shipping in any more.

Boss, maybe you know the fine old gentleman, Fred B. Townsend, of Aztec, New Mexico, who has been in business for more than a quarter of a century there. Well, the old gentleman was out to see our place this month. I hate to put this in my report, but he said "You have really got something here and I thought we had it over there". Boss, don't let Cal. Miller strike me about this for, really, I'm still his boy friend.

Maybe you are wondering why I am skipping around with my bit of information, Boss. Well, here it is. I have been doing a little snooping and find out that some of these contemptible custodians and rangers just read their own reports and if they want to know how many visitors Johnwill Faris or McKinney bragged about, all they have got to do is to look over where it says visitors at Canyon de Chelly or Chaco Canyon and there it is. Well, they are going to have to read all of this mess before they find out who was here. Anyway, Ward Yeager was here for three days and two nights this month to look over erosion in the Chaco with the Soil Conservation Service study group, which consisted of Paul Phillips, chief of party, W. W. Morris, biologist, H. B. Cottingham, agronomist, Bert Lucas, engineer, Hill, soils, and Anderson, range man. They certainly did a lot of studying.

We didn't have much rain this month, Boss, just a trace a couple of times. We have had six cloudy days, 11 partly cloudy ones, and the balance clear. There have been several pretty stiff winds, one from the east which made me button up my last year's sheepskin and caused the red in the minimum to crawl back to 18 degrees during the night. But Boss, that kind of night is just swell for sleeping, that is, if you have enough blankets, your kindling all cut, and it and some paper by the fireplace already to set a match to in the morning, and, I might add, a boy about Son's age to get up and strike the match for you.

One hundred thirty-four visitors visited the monument this month in fifty-one automobiles and one aeroplane. Dale King says I shouldn't

CHACO CANYON (CONT.)

count those in the aeroplanes, but I contact those about the same way he does some of the visitors he contacts.

Boss, that man showed up in a new place again, Paul Lewis Beaubien came over with the King for two days and a couple of nights. Gosh, but I sure enjoyed his visit, I wish he could come over here for a spell this winter and keep me company while we are both snowed in and he is writing up his diary. It certainly was a mistake for King when he got more than one custodian in one place. I don't believe he will ever let that happen again, Boss. That is something he didn't learn at Yale while he was "getting learned" in Reformed Augurology, and getting polished so that some day he could become a gentleman. King is a SWELL guy with a man-size job.

So, merry now is the HOUSE of CASA DE STEENO, since Mary is in the HOUSE of CASA DE STEENO. May the HOUSE of CASA DE STEENO stand as long as PUEBLO BONITO.

Mr. and Mrs. James P. Todd of the Soil Conservation Service from Gallup, New Mexico were also monument visitors this month.

Jack Diehl, J. H. Tovrea, and Cal Miller were Park Service visitors. This was Tov's first visit here, but I bet it isn't his last.

Colonel and Mrs. S. W. Anding, also Colonel and Mrs. A. H. Mueller, were here this month. All were from Santa Fe, New Mexico.

I am having the dog-gondest time keeping my seventeen boundary-fence gates closed. They are worse than the doors to a haunted house. I have cleared away lots of tumble weeds from the fence and burned them. The Soil Conservation Service men told me to carry them to an arroyo so it would help prevent erosion. Boss, did you ever try to carry an armful of those things when they were dry? Well, I did, and it felt like I had on a porcupine robe that had been turned inside out.

Guess I had better stop this and take it to Gallup along with my three youngsters, Son, Sister, and Ora Elaine. They are leaving for Carlsbad, New Mexico, for Thanksgiving so they can help both of their grandmothers eat turkey. Better bring along a turkey and have dinner with me, Boss.

*****SWM*****

CAPULIN MOUNTAIN

By Homer J. Farr, custodian,
Capulin, New Mexico.

November has found this monument with two fine snows and plenty of beautiful weather. The latter part of the month gave us the snows, aggregating about eight inches. We have had just the proper amount of moisture for our road work, as lava will not pack without moisture.

CAPULIN MOUNTAIN (CONT.)

Visitors have been more plentiful than any November in the past. I estimate six hundred. I have definitely learned that the time has passed when we may expect people from only New Mexico and Colorado in the winter. As proof of this, one day last week I noted autos from Massachusetts, New Jersey, Kansas, New York, Oklahoma, Texas, Illinois, California, Colorado, and New Mexico.

The State Tourist Bureau has just placed markers on the newly constructed Highway No. 87. At Capulin a real nice sign outlines the wonders of Capulin Mountain National Monument and tells how to get there. One large descriptive sign is erected at the town of Capulin and one smaller marker one mile both east and west of town calling attention to the larger one.

I have already noticed that these markers have done good. During the past few days, while working on the road, I have talked to people who came in to see the monument on account of seeing the marker, and they told me they were glad they had come.

I have been working the past week on the road with a team and one man, filling up some washes which formed the past July and August, and I have also been dragging the road with the grader. I expect to be through in about another week.

*****SWM*****

BANDELIER

By C. G. Harkins, custodian,
Santa Fe, New Mexico.

ROADS AND WEATHER

Due to the unseasonable dryness, our roads are getting rough and dusty; there being only a trace of precipitation the entire month. With the exception of a few cloudy days, our weather has been ideal, with clear days and cold nights.

Mean Minimum-----	30.9	Clear-----	20
Mean Maximum-----	60.8	Cloudy-----	4
Range-----	30.5	Partly cloudy-----	7
Mean-----	45.8	Maximum-----	76 Oct. 31.
		Minimum-----	18 Nov. 18.

TRAVEL

Our total travel for the monument numbered 982 people. However, we ran ahead of last month's travel and also ahead of the travel for November, 1936. Visitors arrived in 248 cars from 30 states and five foreign countries, and the District of Columbia had 8 representatives. The six states ranking highest by visitor count were: New Mexico, 577; Colorado, 71; Oklahoma, 64; California, 52; Texas, 48; Kansas, 19.

BANDELIER (CONT.)

GENERAL

The visitor contact has been quite a problem at this monument and, as I see it, always will be in view of the fact we have a 50-car campground; a campground that is full during the summer on week-ends and has from five to ten cars in it every day during the week. This is the situation we have to contend with; every car coming into the monument is contacted and given the opportunity of taking a guided trip through the ruins. The ones that do not take a guided trip are either going to the campground or else they have some one in the party who has been through before and considers himself a self-appointed guide. The ones that stop in the campground for a lunch later go up through the ruins, and it's these visitors who scratch their initials in the caves. The Cave Kiva has taken quite a beating the past season from visitors who have been unguided. To prevent this type of vandalism, I have a plan to put into effect next year, with your permission, that will at least preserve the Cave Kiva. The plan will be taken up with you through regular correspondence and, with your approval, will be put into effect as soon as the initials and defacements are obliterated by the ruins stabilization crew.

During a recent trip to the monument by Jim Hamilton, I discussed the idea of putting a dust palative on the trails, and have submitted samples to the engineers' office for costs on the project. The trails are being worked at the present time, tho, removing slides and debris that has accumulated during the summer. The fence on the Detached Section will need considerable repair to put it in first-class condition.

Our wood problem is over for another year as I have just finished cutting around 100 cords of seasoned yellow pine for fire-place and kitchen use.

Work on the Kiva in the Ceremonial Cave was completed November 9 and clean-up commenced on the large Communal House.

On November 14 a party of 24 Park Service people from the regional office at Santa Fe visited the monument and made a trip through the ruins.

The hunting season opened November 1 with very little success for the hunters. The weather has been a deciding factor in-as-much as there was no rain or snow. With the forest exceedingly dry, the deer and turkey remained in the high mountains or else the hunters gave plenty of warning by walking through the leaves.

Two days were spent on insect-control work in company with Forestry Foreman Fulton. The area was found to be very free of insect infestation. The attacks we found were light and in most cases, "pitched" out.

BANDELIER (CONT.)

In cooperation with the Soil Conservation Service, which administers the Ramon Vigil Grant adjoining Bandelier National Monument on the north, we treated twelve beetle trees this month by peeling the bark off, burning it, and cutting the remainder up for firewood.

INTERESTED VISITORS

- Nov. 2. Rien van Santee, world renowned traveler, artist and archaeologist, The Hague, Holland.
- Nov. 7. Brownmoor School of Santa Fe. Ten members spent Sunday in the campground.
- Nov. 7. W. E. Lowell, Associated Press, Denver, Colorado.
- Nov. 10. L. V. Silver, Jr., New York City; W. H. Stevens, Chicago; Mr. and Mrs. V. M. Anes, University of Cincinnati, Cincinnati, Ohio.

NATIONAL PARK SERVICE VISITORS

- Oct. 25. Mr. and Mrs. M. W. Henton, Milton Swatek, and Miss Inez Holman.
- Oct. 26. Charles A. Richey, associate landscape architect from the regional office in Santa Fe.
- Oct. 29. H. H. Cornell, regional landscape architect and John H. Haile, acting inspector, CCC; M. R. Tillotson, superintendent, Grand Canyon National Park and Charles A. Richey, associate landscape architect, Santa Fe.
- Nov. 2. Dr. Charles N. Gould, regional geologist and Erik K. Reed, associate archaeologist.
- Nov. 13. John H. Veale, associate engineer.
- Nov. 21. Prentice C. Lakey, contract examiner, Santa Fe.
- Nov. 23. Erik K. Reed, associate archaeologist, Santa Fe.
- Nov. 14. Dr. Charles Gould, regional geologist; Dr. W. B. McDougal, wildlife technician; Mr. and Mrs. L. V. Randau (Mr. Randau is acting assistant regional director); Durette O'Neill, clerk; Louise Lem, senior clerk; E. A. Pesonen, assistant regional director; Mr. and Mrs. Montgomery; Mr. and Marguerite Wirt; Mr. and Mrs. J. B. Hamilton; Eunice Berg; Augusta Huchtemann; Roe Neville; Leo McClatchy; Milton Swatek, and Merle Hinton.

*****SWM*****

Cy has put his finger on the one weak spot in handling the visitors at Bandelier National Monument. Of course, it would be no problem if we had enough men but, seeing that we are going to be short-handed someplace in the Southwestern Monuments for the next life-time or two, we will be needing men elsewhere so badly that Bandelier is likely to go undermanned for some years yet. Anything you can suggest along the line of handling this problem, Cy, will be mighty welcome.--F. P.

*****SWM*****

BANDELIER CCC

By H. B. Chase, project superintendent, Santa Fe, N. Mex.

The 20,000 gallon concrete reservoir has been poured and outside forms removed. Inside forms will remain in place three weeks before removal, at which time the necessary pipe connections will be made and the structure backfilled.

All footings for Unit No. Two, Lobby and Sales Room of the Hotel Development, are now complete in place and wall construction has now started on the front and side elevations.

The walls of two rooms in the Employee's Dormitory (Hotel Development) are complete to lintel height, footings of the remainder of the project are in place and all door and window opening frames completed.

The Ruins Stabilization crew completed the work in the Kiva at the Ceremonial Cave and started stabilization of the Community House during the month. Approximately 40 rooms of the Community House have been completed.

Survey of the proposed telephone line to Santa Fe was completed November 24. Plans for this proposed project will be submitted at an early date.

Quarrying and shaping of building stones in the rock quarry has been a constant operation throughout the month.

The lunch counter and cashier's stand were assembled and placed during the past month under the furniture, carving on the counter stools was completed which now makes them ready for assembly and installation. This work is being installed in the completed Unit No. One of the Hotel Development.

*****SWM*****

BANDELIER RUINS STABILIZATION

By J. W. Hendron, foreman,
Santa Fe, New Mexico.

During the writing of last month's report the stabilization of the kiva in the Ceremonial Cave was well under way.

An attempt to strengthen the wall above the ventilator by using a jack to hold the lintel in place was successful.

The next step was the rebuilding of a portion of the wall which had fallen out in places. Building stone was packed up the ladders from the floor of the canyon. The stones were worked down to fit tightly in the ragged portions of wall.

BANDELIER RUINS STABILIZATION (CONT.)

The three main vigas were of pine and were laid exactly in the same position as the ones removed. Cross poles of pine, approximately three inches in diameter, were laid across the vigas and nailed. This was followed by a layer of small willow branches, then a thin coating of smaller branches and grass. Two-by-fours were put down edgewise and nailed to the main vigas just far enough apart to lay and nail down a layer of tar paper. Another course of rock was laid around the wall to hold the layer of mud and chunks of tuff which was brought up to the level of the 2 x 4's. When the mud had dried, a coating of hot tar was mopped over and then the layer of tar paper was layed on, nailed to the two-by-fours and flashed into the wall and into a small rain trough. Another layer of hot tar was mopped over the paper and an additional course of building stone was laid on forming a parapet wall. About two inches of mud was poured over this and, when almost dry, ordinary dirt from the floor of the cave was thrown on.

The central opening was put back in its former position and the old frames were used. It consisted of short lengths of pine notched at the ends and nailed to the main vigas.

The broken places in the wall of the structure were replastered, the old original portion being left as it was. Although the hard plastered floor was broken in places, no attempt was made to repair it in-as-much as the new roof will protect it from the elements.

Two drawings were made in the Ceremonial Cave, one of the cave itself showing all of the rooms present as near as could be determined and the position of the kiva, and then a separate drawing of the kiva on a larger scale.

With the stabilization of this little kiva completed, we moved on to Tyuonyi, the big community apartment house, which was partly excavated by the School of American Research a number of years ago. Complete stabilization of all the walls is necessary and to date approximately 40 of the 250 rooms have been completed. A more detailed account will be given in next month's report.

*****SWM*****

BANDELIER FORESTRY

By James T. Fulton, forestry
foreman, Box 669, Santa
Fe, New Mexico.

During the entire month I have had a crew of men working on Unit Two, Lobby and Sales Room of the Hotel Development, laying floorings and starting the walls.

*****SWM*****

TUMACACORI

By Charlie Steen, junior park
archeologist, Box 2225,
Tucson, Arizona.

Nine hundred three persons visited this monument during the period October 24 to November 23. Of this number, 709 were given conducted ruins and museum trips, (the museum being the small collection stored in the office) and 194 either looked at the mission from the parking area or merely used the facilities.

The new administration building, which is rapidly reaching the condition in which it will be turned over to us, arouses much interest among visitors. One dear old lady a few days ago asked, "What are you going to do with the National Monument you are building over there?".

Jim and Margaret Felton left on the 16th. for White Sands. A couple of hours before the Feltons left, "Chiricahua Frank" Fish and a well-loaded truck set out for the same destination. I hadn't seen Frank for nearly a year and a half and was kinda glad to see the old rascal again.

Park Service visitors during the month were: Frank Pinkley, Hugh Miller, J. H. Tovrea, Jack Diehl, Messrs. Doty and Eastman, and Charles McGuire.

*****SWM*****

TUMACACORI MUSEUM

By Frederick D. Nichols,
inspector, Box 2225,
Tucson, Arizona.

REPORT FOR WEEK ENDING OCTOBER 30

On Monday, October 25, work was continued on the plastering and lathing. The colored cement was applied to the canales and, after several samples were made, I choose one that was similar to the shade selected. It was given a very hard finish like the old ones on the mission itself.

Mr. Tovrea and I had agreed that it would be a good idea to place a shell in the drinking fountain niche. So on Tuesday I cut two templets, the size I thought the shell should be, and had the plasterer install it. It is quite similar to those on the mission belfry and recalls the shell motif on the entrance doorway. In the afternoon, Ranger Felton and I drove to Nogales to receive the glass shipped from Washington for the museum cases. The glass had not been properly packed, and we found a large amount of it broken.

We decided to finish unpacking the glass at the monument, and found most of it a total loss. The lath for the groined vault in the View Room was placed. I thought that some of the plaster edges were

TUMACACORI MUSEUM (CONT.)

too hard and sharp, so had the plasterer go over some places and soften the line to give a more uneven texture.

On Thursday, the forms for the shell over the doorway were placed and work begun blocking out the ornament. I had several places patched on the interior lath where the Steeltex did not overlap.

On Friday work was begun on plastering the patio walls and the forecourt wall. The plaster cornice on the main building was completely finished. Plastering was begun on the interior.

Work on the measurements of the Mission progressed rapidly this week. All the elevations, plans, interior sections except west longitudinal and cross section through south end of nave and belfry were completed.

WEEK ENDING NOVEMBER SIX

On Monday the plumber arrived and connected the office lavatory and the loggia fountain and workroom. The pipes were tested with water over the week-end and approved. Plastering was begun on the View Room and Kino Room, Office, and Lobby. The bricklayers began on the Loggia floors. I had the joints made slightly concave so the brick would wear down to them, and approved the pattern arrangement.

By November third, the View Room and Exhibits Room were plastered, and the plaster grilles were set in the heating and ventilating openings. The floor on the north loggia was completed.

On Thursday the Kino Room received its final coat of plaster. We completed the measurements of the mission, except the Mortuary Chapel, and will begin the drawings next week. I made copies of our notes on the belfry for Custodian Caywood to check with the model that is being made in California.

On Friday, with Ranger Felton, Eastman and Maguire, I drove to Tombstone to inspect the buildings for Historic American Buildings Survey records. I liked the Birdcage Theatre very much, and would like to do it along with the Fire Station and the City Hall and Court House. The buildings are in a good state of repair and have quite a New Orleans flavor with their long French windows and French Victorian detail. The bank and Crystal Palace Bar were also noteworthy. We then proceeded to inspect the site of Quiburi Mission, one of Kino's early churches, and found adobe walls in a compound about 200 x 300 feet. I think a record should be made of it when measurements are taken in Tombstone. We then tried to find Santa Cruz Mission, but it was getting too dark to see, and so we had to postpone it for another time.

By the sixth of November, the interior had all received its final

TUMACACORI MUSEUM (CONT.)

coat of plaster and the brick was partly laid in the View Room floor.

WEEK ENDING NOVEMBER 13

On Monday, November 8, the brick floor in the View Room was completed. The front wall was plastered and the shell motif over the doorway was finished. Mr. Bennett and Mr. Vierra of Santa Fe arrived and we discussed the color of the museum, the lighting and the murals depicting the life of Father Kino that Mr. Vierra is going to paint.

The following day they returned with Mr. Tovrea and Mr. Sundt and the painter who made color samples for our approval. It was decided to use a light buff on the exterior with a white cornice and a darker adobe color for the base of the building. We chose a yellowish orange for the ceiling of the exhibit rooms and a sky-blue and terra-cotta red for the walls. The Kino Room floor was begun. It was decided also to use a light cobalt blue on the loggia walls and to omit the white painted dado.

On Wednesday the floor in the Kino Room was completed in a very satisfactory manner. The slight unevenness gives it a great deal of texture and charm. The south loggia floor was begun. All plastering was finished and I had places repaired where the surface had been chipped. The painters began work on the loggia ceilings using a Spanish white or off-white color. All doors except the main entrance were hung by this evening. By Friday evening all the brick floor except that in the Office and Lobby were completed. The painters finished both loggia ceilings and made ready to paint the exterior the following week.

WEEK ENDING NOVEMBER 20

On Monday, November 15, work was begun on the Lobby floor. This is a more regular design than that of the View and Kino rooms and is a pleasant variation. The painters developed engine trouble in their car and so did not arrive until very late in the day.

The following day, after testing many samples for the main color on the exterior, I finally approved a Spanish Buff Bondex tempered with white and a little of the adobe color to gray it. It is a shade that blends in well with the landscape and the old mission itself. The north side of the exterior was painted with its first coat.

By Thursday evening the floor in the lobby was completed as were the entrance doorway steps. It is very well done and the design completes a very satisfactory room. All the exterior had received its first coat. In the afternoon we mixed the base color using adobe terra-cotta red, Spanish buff, and a little umber. It is a good color as it helps to tie the building into the surrounding earth and blends

with the upper walls. The counter and gate were set in place, and I had the stain applied very lightly to them and to the small doors in the lobby. Then the finish was rubbed to keep them light and, although they are darker, they blend with the large entrance doors.

On November 19 the work was begun setting the entrance doors. They are similar to those on San Ignacio mission in Sonora, Mexico, and are a very creditable piece of work by the CCC camp at Bendelier. I had heavy screws applied where the hinges are set to keep them from tearing loose, as we did not want to mar the design with strap hinges. Many samples were mixed for the orange in the Exhibit Room ceilings. By using terra-cotta red, bright orange, yellow ochre, and umber, we finally selected a dull earth-colored orange, quite similar to that still existing on the soffit of the entrance arch on the mission. The sky-blue walls were mixed with Prussian blue, ultramarine blue, white, and a little yellow ochre to grey the color. The red bases consisted of terra-cotta red, ochre, and umber. The samples were selected under artificial light, as there is no natural lighting in the exhibit rooms.

On Saturday Mr. Tovrea arrived and it was decided to add another coat to the exterior for permanence. He approved the colors that had been applied.

WEEK ENDING NOVEMBER 27

On Monday, November 22, the second coat was applied to the exterior. It gives a more even finish and a less greyed color. The electrician arrived and began installing the underground cable from the pole to the building.

By Tuesday evening all the painting was completed with the exception of the View Room.

On Wednesday Mr. Pinkley, Mr. Miller, Mr. Sundt, and Mr. Tovrea arrived for an inspection of the building. The final credits and extras were decided upon. It was arranged to plaster and paint the south forecourt well.

The painter had stenciled the design on the View Room ceiling and I selected a dull yellow, a terra-cotta red, a dull cobalt blue; colors that were as near as possible to the originals in the mission. For the base of the room, we used a yellow ochre with a little sienna in it to darken the color. The lighting fixtures were installed in the Lobby and Office rooms. The concrete floors in the exhibit rooms were cleaned with a solution of muriatic acid.

On November 27 the wood floor was laid on the stair in the work room, and the exterior gates were hung.

HEADQUARTERS

BRANCH OF EDUCATION

The educational staff for the month of November was composed of Park Naturalist King, Junior Archeologist Steen, and Junior Park Naturalist Dodge. Steen was temporarily transferred to Tumacacori National Monument, taking up his duties there November 12. King took sick-leave the last four days of the month. Dodge was on duty throughout November.

Due to an unusual amount of detail work in obtaining and recording information desired by the Washington office, the time of the staff was largely taken up with routine matters and very little definite progress was made. The transfer of Steen reduced the staff to two members for the latter half of the month.

Prior to taking over at Tumacacori, Steen's activities consisted of the following:

Cutting stencils and mimeographing informational
circulars for Aztec Ruins National Monument- - -1 day
Assembling and arranging photographs in a
systematic file- - - - -5 days
Preparing plans for White Sands Museum - - - - -5 days
Moving to Tumacacori - - - - -2 days

Dodge's work was so diversified as to be spread out thin due to the informational questionnaires and to the absence of Park Naturalist King who made a trip to Chaco Canyon and other monuments. Dodge's activities include:

Banding Birds at Casa Grande - - - - -2 days
Conferences (Museums, nature trails, etc.) - - - - $\frac{3}{4}$ day
Monthly Report and Special Report #22- - - - -11 days
Office work including writing 21 letters, sending
out specimens for identification, binding month-
ly reports, issuing library books, etc.- - - - -3 days
Photography (personnel and specimens)- - - - -1 day
Obtaining information and filling out forms for
the Washington office- - - - - $3\frac{1}{2}$ days
Preparing material for talks outside monument- - - $\frac{1}{2}$ day
Visit to Boyce Thompson Arboretum- - - - - $\frac{1}{2}$ day
Planting small shrubs and watering plants- - - - $\frac{1}{2}$ day
Relief guiding at Casa Grande- - - - -1 day
Tumacacori planting plan research- - - - -1 day
Receiving, unloading, and storing freight- - - - $\frac{1}{4}$ day

On the evening of December 12, he spoke at a meeting of 75 Pima

BRANCH OF EDUCATION (CONT.)

Indians at the Blackwater Community Club near Blackwater, Arizona.

Following is a summary of the activities of Park Naturalist King for the month of November:

Letters written during the month: 78.

Informational circulars mimeographed: 2,000

At the beginning of the month, Park Naturalist King assembled the 1937 bird banding report and sent it to the Biological Survey at Washington, D. C.

The naturalist staff spent one morning, October 26, planning the exhibits for the White Sands Museum, a project which stands extremely high on the priority list for Naturalist activities. Some planning was also done on the proposed orientation station on Massai Point at Chiricahua National Monument. This project was discussed with Associate Landscape Architect Lyle Bennett who will draw up the plans for the building.

One day each was spent on the Southwestern Monuments Association, a continuing project which has been discussed in previous reports, and the Recreational Areas Study Reports, a questionnaire which is being sent out for the Washington office.

On November 13, King left headquarters to visit the Mobile Unit for ruin stabilization working at Chaco Canyon National Monument. He picked up Junior Park Archeologist Paul Beaubien at Walnut Canyon and took him to Chaco Canyon and Aztec Ruins.

The work at Chaco Canyon under foreman Gordon Vivian was found to be progressing very satisfactorily. While at Aztec, King inspected leaking prehistoric roofs and looked over the other areas which are to receive labor by the mobile unit this winter.

Park Service visitors to headquarters include: Cal Miller, Tom Onstott, Lyle Bennett, Ward Yeager, Lon Garrison, Jim Brewer, Jim Felton, Frank Russell, Jack Diehl, and Adrey Borrell.

Accessions for November:

Fifty-six small plants and seedlings for landscape planting from the Forest Service nursery at Superior.

One hundred fifty library file boxes from the Berkeley office.

During November, the Southwestern Monuments Loan Library received: 12 books, 30 periodicals, 92 pamphlets, and five reprints.

*****SWM*****

MOBILE UNIT

By Gordon Vivian, foreman,
Chaco Canyon, New Mexico.

There is not a copy of last month's report in the canyon, so I hardly know where to begin, 'though I can say off hand that there are two things about the unit which impress me now and then. One is that we are making a little progress on Bonito, and the other that, as the weather gets colder and colder, we have more and more stove mouths to feed. There is the boiler for the camp shower room, a stove in Mac's office and one in mine, and six more in camp. Every time that wood goes to something else it hurts. After nine off-and-on years of canyon tub baths, I often wonder why somebody didn't send Bob Harris out sooner. A special stamp showing a large man doubled up in a small tub should be issued to commemorate his entrance into Chaco.

As to Bonito, I don't feel quite so pessimistic as many other folks. Mac., Cal Miller, and others who happen by, often say that the work doesn't look so bad and that if they can stand to have us around for another five years or so Bonito may once again become more or less solid.

The reason for this gloom about us being so slow is, I think, that all of our work has been concentrated on one area and this area was the worst to begin with. This area, to which we seem to adhere with no effort at all, contains nine kivas. To date we have done about half of the clearing and drainage necessary. This is 550 yards of fill removed. Then of these nine kivas, the walls and benches of six can be called about complete with a little repointing here and there. Six kivas doesn't sound like a great deal but you should have seen them before we started. The work done on them totals, without too close figuring, 600 square feet of veneer replaced, 380 square feet of bench top repaired, 260 cubic feet of exterior and support wall built, 570 cubic feet of kiva top laid in the first course of Bitudobe mortar and 40 square feet of wall top laid in the final Bitudobe capping as suggested by Dale King. Outside of the Kivas we have repaired three room walls, rebuilt another one and done some repointing.

As Dale has no doubt reported, we plated the tops of two kivas with a single course set in Bitudobe, just a single layer all around, to hold the new repair work below. He and Mac laid out a trail over these kivas which is to be set in concrete and the rest of the wall will be given a stabilized capping. We have started on this but it is hard to get the idea across to the boys.

So I think that while we seem to be standing still, at the same time we are making a little of what might be called undercover progress and some day this area will all of a sudden be completed. I have hopes. I think we'll finish Bonito in at least four and a half years.

As the result of a little recruiting and a poorer pinyon crop than was expected, the crew is now up to twenty five. When things are going

MOBILE UNIT (CONT.)

smoothly and the regulars are on the job, this makes a nice, easily handled outfit and the way some of the stone masons take to these wretched walls makes me forget that the axle for the Dodge is coming by slow freight from Siberia, that people burn wood, and that somebody has to account for the things bought, calculate how much it costs to run a truck half a mile, and figure out where the man-days went.

When we get into a tight and twenty-five Indians look like seventy-five, the extra ones are sent out to gather and pile rock. It's something that we can always use and never seem to have enough of.

If this report doesn't seem to have a great deal of continuity, it is because I had to break off in the middle of it to go up the road twenty miles to settle an argument between two of the boys and a man who took a load of wood away from them. I didn't get the wood back but we got another load and there wasn't any bloodshed either so, like most of these stories of strife, things turned out happily in the end.

As to the status of the Bitudobe mortar; we are using the mix recommended by the Butumuls laboratory where they examined the soil samples from the canyon. This is seventy percent sand, thirty percent adobe with three and nine-tenths percent Bitumuls to the total weight of the soils. The first job that we did with this mix was to plaster the tops of two kiva benches. Results were not so good. It cracked and not even I like the looks of it. From that we tried plating the tops with stone set in a drier, stiffer mix. This is much more satisfactory as it does not crack and gives a better finished appearance.

While in Albuquerque, I spent some time at the plant where they make commercial Bitudobes. Their product appears to be about half gravel, and since the amount of stabilizer in any mix depends upon the percentage of the soil used that will pass through a 200 mesh screen, they can use a much weaker mix than ours. I also visited four jobs where stabilized plaster was used. On three of these the mix was comparable to ours while on the fourth the plaster was again about half large sand and gravel.

At the plant, they use a special mill for mixing the soil and stabilizer. Their advice is that if a concrete mixer is used it must be of the tilting drum type, otherwise it is almost impossible to get the completed mix out of the machine.

Our safety and first-aid meetings are still the same chore and it is impossible to get the men to take any interest in them. When you quiz them on what has been said they reply that you have been telling them a story about Pueblo Bonito and all the men working on it. They never have any suggestions to make and when the thing is over and you ask if there are any questions they may have the reply, "Yes. When are we going to our checks?"

*****SWM*****

We have been watching Gordon's before-and-after pictures as they went across our desk with far more interest than he imagines, and we believe he is doing a real job up there in Pueblo Bonito. We have had trouble in getting this mobile unit away to a good start. First we had an engineer and no archeologist. After a couple of months of paper skirmishing, Gordon's papers came through and then the engineer decided to quit and go back to school. Now for a couple of months we have been fighting paper battles to get an engineer, the latest report from the front being that we are back at the foot of the ladder and are requesting another list of eligibles. In the meantime Gordon has his hands full being archeologist, engineer, and straw boss as well as keeping up the paper work for a 24-man camp. F.P.

*****SWM*****

VISITORS FOR NOVEMBER

By the Boss.

November was a pretty good month for visitors and ran close to the normal. We had 17,795 visitors, as nearly as we could get the total, which was a few hundred more than last month (17,412) and considerably more than the same month a year ago when we had 14,283.

With these 17,795 visitors, we made a 50.7% contact which is not quite so good as last month when we made 52.5% and not nearly so good as last year when we made 73.0%.

Of the 9,033 persons we contacted, 5,643 were taken on field trips and 3,478 were given personal talks in the museums. The 5,643 who went on field trips were taken in 1,097 guided parties, the average party being 5.1 persons and the average time of the trip being 40.4 minutes. The party is slightly smaller than last month and one person smaller than last year. The average time is nearly 3.5 minutes less than last month but nearly four minutes more than last year.

In the museums we had 722 parties with a total of 3,478 persons; an average of 4.8 persons as against 4.9 persons last month and 4.5 for last year. The average time of the party in the museum this month was 18.3 minutes as against 18.2 last month and 15.1 minutes last year.

Our northern monuments, around the 6,000 foot level and above, are going into their winter minimums or, in some cases, practically shutting down, while the southern monuments are beginning to build toward their winter maximums.

We understand that the Wolf Creek Pass road, in Colorado, is now finished and that there will be an attempt to keep it open this winter. We are quite interested in this news as there is a chance for this road, if it is kept open, to influence the traffic at Aztec and Chaco Canyon during the winter.

VISITOR STATISTICS FOR NOVEMBER, 1937
SOUTHWESTERN MONUMENTS

MONUMENT	EMPLOYEES		FIELD TRIPS				MUSEUM TALKS				Unattended		Total Informational Contact	Total Travel	Percent contact
	Per.	Temp.	No.	Att'd	Time	Av. Att'd	Av. Time	No.	Att'd	Time	Av. Att'd	Av. Time			
Arches	1 P	--	3	34	540	11.3	180	--	--	--	--	--	27	106	--
Aztec	2	--	109	611	3170	5.6	29.0	135	613	2695	4.5	19.9	54	1276	165
Bandelier	1	2 CCC	66	270	4720	4.0	71.5	69	234	860	3.3	12.4	675	982	51
De Chelly	1	--	3	8	240	2.6	80.0	--	--	--	--	--	37	45	--
Capulin	1 P	--	--	--	--	--	--	--	--	--	--	--	600	600	--
Casa Grande	2	2 CCC	468	2448	15300	5.3	32.6	274	1480	5167	5.4	18.8	216	2664	146
Chaco Canyon	1	--	--	--	--	--	--	--	--	--	--	--	134	134	--
Chiricahua	1	2 CCC	50	356	2343	7.1	46.8	--	--	--	--	--	361	366	49
El Morro	1	--	38	133	2810	3.3	73.9	--	--	--	--	--	57	133	70
Gila Cliff	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gran Quivira	--	1	49	201	1990	4.1	40.0	--	--	--	--	--	12	291	213
Hovenweep	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Montezuma Castle	2	--	106	650	5278	6.1	49.8	99	511	1871	5.1	18.9	55	1161	164
Natural Bridges	1	--	5	29	1440	4.0	288.0	--	--	--	--	--	38	38	--
Navajo	1	--	1	2	180	2.0	180.0	--	--	--	--	--	2	2	--
Organ Pipe	--	--	--	--	--	--	--	--	--	--	--	--	500	500	--
Pipe Spring	1	--	6	14	145	2.3	24.1	--	--	--	--	--	35	165	200
Rainbow	--	--	--	--	--	--	--	--	--	--	--	--	10	10	--
Saguaro	--	--	--	--	--	--	--	--	--	--	--	--	1600	1600	--
Sunset	--	--	--	--	--	--	--	--	--	--	--	--	183	183	--
Tontoc	--	1	--	--	--	--	--	--	--	--	--	--	250	250	--
Tumacacori	2	--	136	706	4580	4.7	33.0	35	305	568	8.7	16.0	194	709	78
Walnut	1	--	43	144	1223	3.3	28.4	96	295	2000	3.0	20.8	221	439	60
White Sands	1 Pl	--	--	--	--	--	--	--	--	--	--	--	6328	6328	--
Wupatki	1	--	14	46	413	3.3	29.5	14	40	266	2.8	19.0	4	86	95
Yucca House	--	--	--	--	--	--	--	--	--	--	--	--	20	20	--
TOTAL	22	8	1097	5643	44374	5.1	40.4	722	3478	13227	4.8	18.3	11546	9033	50.7
Last Month	23	6	1114	5836	49039	5.2	44.0	658	3270	12016	4.9	18.2	11080	9151	52.5
November, 1936			1399	7926	45733	6.1	35.2	691	3127	10455	4.5	15.1	10553	14283	73.0

VISITOR STATISTICS (CONT.)

We want to thank the men in the field for the trouble and care they have put in on the new visitor statistics forms. They are a little more complicated and therefore a little more trouble to keep but it looks like they are going to yield a lot more information so the trouble will be well worth while. Different monuments will have different problems in filling this form; Casa Grande presents a pretty fair sample of all the kinds of trouble which can occur including peaking of the load, overlapping parties, breakaways, picnickers, etc. and we are making an especially close study of the time and bother of keeping the statistics at that monument. At times the system simply breaks down because the visitor must be served at all costs and without being bothered, so the peak load ruins the gathering of statistics, but these times form no great percentage of the whole and the information can be plotted--in so as not to interfere with the final results.

*****SWM*****

CASA GRANDE VISITORS TRAVEL YEAR 1937 —

By the Boss.

We are publishing a table of the Casa Grande visitor figures for the year October, 1936 to September, 1937, inclusive. A similar table for the previous year will be found on page 245, Monthly Report for October, 1936, if a detailed comparison is desired.

In the year just past, we have given 3,863 field trips at Casa Grande as against 3,707 for the previous year. This represents a nice increase in business. The additional trips this year were evidently the result of the increased visitors, the number having increased from 25,936 last year to 31,163 this year. Our total time consumed with parties dropped from 123,148 minutes last year to 119,431 minutes this year. This was despite the fact that we increased our parties a little over one person each. The average time of party dropped from 33.2 minutes last year to 30.9 minutes this year.

Museum talks, numbering 2,430 last year, went up to 2,910 this year. The number of persons served went from 17,182 last year to 22,588 this year. We raised the total time in the museum from 51,453 minutes last year to 56,666 minutes this year. This was a nice rise but was not in proportion to the number of visitors, for our average visitor time fell from 21.1 minutes per party to 19.4 per party. The average party went from 7.0 to 7.7 persons. It will be noted that the parties are a little larger in both the field trips and museum talks for the past year and we wonder if this is a reflection on the roomier models of cars.

Our total travel this year was 33,661 visitors as against 27,704 last year. With the 33,661 visitors, we made 53,751 contacts or 159%, whereas with the 27,704 visitors last year, we made 43,218 contacts, or 155%.

CASA GRANDE VISITOR FIGURES

OCTOBER, 1936 TO SEPTEMBER, 1937, INCLUSIVE

DATE	EMPLOYEES	FIELD TRIPS			MUSEUM TOURS			Total	Total	Per cent						
		No.	Att'd Time	Av. Att'd Time	No.	Att'd Time	Av. Att'd Time	Contacts	Travel	Contact last year.						
1936	2	-	323	2190	9513	6.7	29.4	288	1865	6436	6.4	22.3	4055	2190	185	135
NOVEMBER	2	P.	335	2909	9890	8.6	29.5	233	1679	4936	7.2	21.1	4588	2909	157	136
DECEMBER	2	P.	311	3052	10342	9.8	33.5	183	1753	3908	9.5	21.3	4805	3052	157	81.1
1937	2	1	386	3729	11706	9.6	30.3	294	2709	6530	9.1	21.5	6438	3744	171	142
FEBRUARY	2	2	506	3646	13092	7.9	26.0	408	3013	6367	7.3	16.0	6659	3845	173	179
MARCH	2	1	393	3686	12026	9.3	30.6	325	2856	5559	8.3	17.1	6542	3912	167	174
APRIL	2	1	378	3156	12376	8.2	32.7	295	2314	5494	7.8	18.6	5470	3627	150	157
MAY	2	1	281	2097	8672	7.4	20.9	214	1580	4232	7.3	19.7	3677	2689	136	133
JUNE	2	-	287	2072	9350	7.2	32.5	217	1547	4194	7.1	19.3	3619	2389	151	183
JULY	2	-	212	1392	7047	6.5	33.2	166	1093	3353	6.4	20.2	2485	1613	154	191
AUGUST	2	-	219	1593	7445	7.2	34.0	152	1174	3025	7.7	19.9	2767	1804	153	198
SEPTEMBER	2	-	232	1641	7972	7.0	34.4	135	1005	2832	7.4	20.9	2646	1887	140	188
TOTAL			3863	31163	119431	8.0	30.9	2910	22588	56666	7.7	19.4	53751	33661	159	
LAST YEAR			3707	25936	123158	6.9	33.2	2430	17182	51453	7.0	21.1	43218	27704	155	

CASA GRANDE VISITORS, TRAVEL YEAR 1937 (CONT.)

All of which means that we handled more people at Casa Grande last year through both the field trips and museum talks; that we were able to give our service to a larger percentage of the visitors, but that we did not give them quite as much time per party. The inference is that the increase in number of visitors, striking an already crowded personnel, caused a speeding up of parties in order to serve the increased numbers and this reduced the party time. It would be interesting, if we were able to do so, to add another man or two in the peak season and see if we lengthen the party time again; I think we could.

*****SWM*****

VISITOR INFORMATION

On Six Southwestern Monuments,
Tabulated by Quarters.

This month I have been juggling some of the visitor statistics from six monuments having museums. I thought there might be some points of interest in breaking these figures up into quarters of the visitor year and have prepared such a table. It shows the fluctuation by quarters for the whole six monuments but I have also broken the totals down into two groups. Casa Grande and Tonto form what we term the southern monuments, having their peak in winter and their low in summer. Aztec, Chaco, Montezuma, and Walnut are grouped as northern monuments, having their peak in summer and low in winter.

The following notes cover the main points of the table by quarters:

FIRST QUARTER--October to December.

In this quarter we gave 2,197 field trips and 1,840 museum trips. There were 12,747 persons in the field trips and 9,621 in the museum trips. On a total of 14,568 persons, we had 22,368 contacts, or 153%.

We have many more field trips than museum trips in this quarter. Connected with this is the fact that we lose about a quarter of the visitors in passing from the field to the museum. I think the reason for this is that we are undermanned at Casa Grande during the later part of this period and the boys must turn field parties into the museum without attendance; we thus lose a count or contact on many persons who actually do see the museum but get no explanation of it.

The breakdown between the northern and southern monuments shows traffic about evenly divided for the quarter between the two southern and the four northern monuments, at least as far as number of trips are concerned, 52% of the field trips and 50% of the museum trips going to the southern monuments. Visitors, however, divide quite differently, 65% of the field visitors and 50% of the museum visitors going to the southern monuments. The southern monuments made 65% of the contacts for the quarter on 60% of the visitors. They also got 164% contact on their visitors while the northern monuments made 136% contact during

SOUTHWESTERN MONUMENTS 390-c MONTHLY REPORT FOR NOVEMBER, 1937.

SIX MUSEUMS WITH MUSEUMS BY QUARTERLY TOTALS
AND BY NORTHERN AND SOUTHERN GROUPING.--VISITOR YEAR, 1937

	Field:No.	Trips:Persons	Time	Av. Party	Av. Time	Museum:No.	Trips	Persons	Time	Av. Party	Av. Time	Total Contacts	Total Persons	Per cent of Contact
Oct. --Dec.	2197	12747	75997	5.8:35.6		1840	9621	34749	5.2:18.8			22368	14568	153%
1st Qtr. South.	1155	8714	37831	7.5:32.7		936	5872	18159	6.2:19.4			14586	8353	164%
1st Qtr. North.	1042	4053	36163	3.8:54.7		904	3749	16590	4.1:18.3			7782	5715	156%
Jan. --March	2007	13879	67123	6.9:33.4		1651	11123	30573	6.7:13.5			25002	16197	154%
2nd Qtr. South.	1587	12239	51159	7.7:32.2		1226	9344	21061	7.6:17.1			21583	13539	159%
2nd Qtr. North.	420	1640	15964	3.9:58.0		425	1779	9512	4.1:22.3			3419	2658	128%
April - June	2711	16722	107818	6.1:39.7		2557	14739	50330	5.7:19.7			31511	23424	134%
3rd Qtr. South.	1221	8583	43493	6.8:35.6		983	6412	17725	6.5:18.0			14795	10361	142%
3rd Qtr. North.	1490	8339	54325	5.5:43.1		1574	8377	32355	5.3:20.7			16716	13063	127%
July - Sept.	3075	18005	118812	5.8:38.6		3040	17202	56277	5.6:18.5			35207	26386	133%
4th Qtr. South.	850	5320	32263	6.2:57.9		648	4020	11540	6.2:17.8			9340	6276	148%
4th Qtr. North.	2225	12685	86546	5.7:36.8		2392	13182	44737	5.5:18.7			25867	20110	128%

VISITOR STATISTICS ON SIX MONUMENTS WITH MUSEUMS (CONT.)

the quarter.

SECOND QUARTER--January to March.

We gave 2,007 field trips and 1,651 museum trips during this quarter; a slightly less number than in the previous quarter. There were 13,879 persons in the field trips, a slight gain over the first quarter, and 11,123 persons in the museum trips, a good gain over the first quarter. There was a loss of 2,756 persons between the field and museum trips, or 19%. During the first quarter it was 3,126 loss on 12,747, or 24%. Our extra help, which by this time is becoming effective at Casa Grande, is lowering this loss between the field and museum. There is a slight drop in total number of field and museum trips caused by the four northern monuments being at the low peak of their winter period. The southern field trips have gone from 1,155 to 1,587 while the northern field trips have gone from 1,042 down to 420; museum trips show similar changes. The southern monuments now furnish 79% of the field trips handling 88% of the field visitors, and 74% of the museum trips handling 84% of the museum visitors. Out of 25,002 contacts, 21,583, or 86%, are made in the southern group, and of the 16,197 visitors, 13,539, or 83%, were handled in the south. The southern monuments make 159% contacts on their visitors while the northern monuments make 128% during this quarter.

THIRD QUARTER--April to June.

We gave 2,711 field trips to 16,722 persons and 2,577 museum trips to 14,789 persons. Out of 5,268 units of service, 51% were field trips and 49% museum trips. In the first quarter, out of 4,037 units of service, 54% were field trips and 46% were museum trips. In the second quarter, out of 3,658 units of service the percentage remained the same, 54% field and 46% museum. In the fourth quarter, out of 6,115 units of service the division was 50-50. I don't know why the percentage of museum trips should drop in the dull season.

In this quarter we get a definite rise of 704 field trips and 906 museum trips. The southern monuments have gone over their crest and are on the way down; of the 2,711 field trips they furnish only 45% and of the 2,577 museum trips, they furnish only 38%. However, while furnishing only 45% of the field trips, the southern monuments handle 50% of the field visitors; and while they furnish 38% of the museum trips, they furnish 43% of the museum visitors. The southern monuments handle 44% of the visitors this quarter and make 46% of the contacts. The southern monuments make 142% contacts on their visitors this quarter and the northern monuments make 127%.

FOURTH QUARTER--July to September.

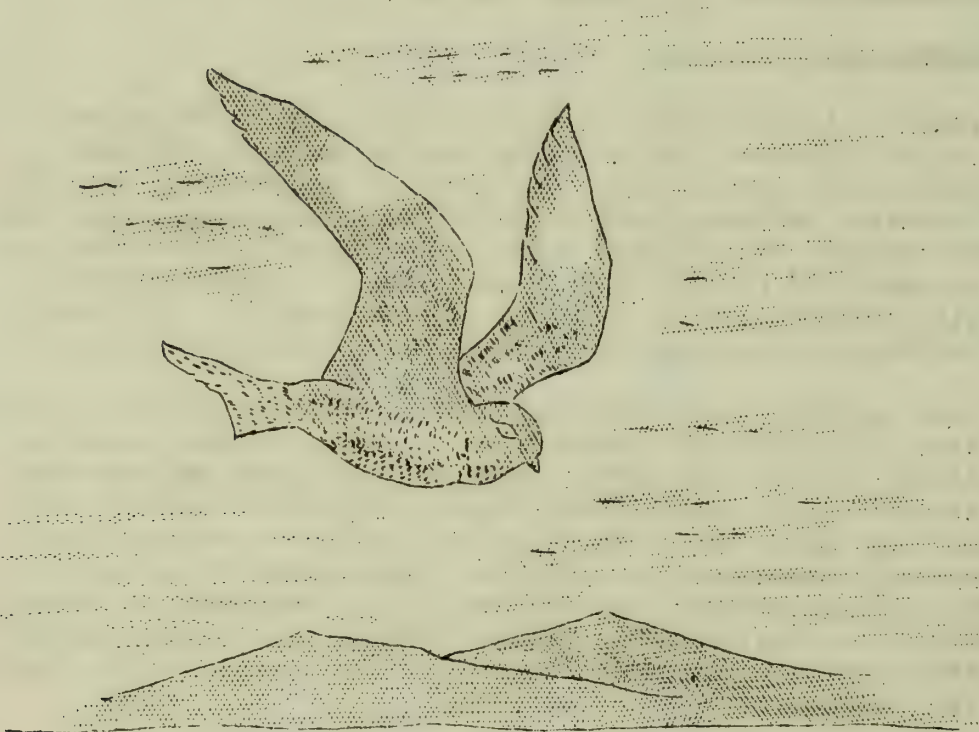
In the fourth quarter, we gave 3,075 field trips and 3,040 museum

VISITOR STATISTICS ON SIX MONUMENTS WITH MUSEUMS (CONT.)

trips. As was pointed out above, this is the only quarter when field and museum trips are practically equal. I think this must be because Casa Grande is at its lowest point where it is bringing its museum trips up nearest to its field trips, or in other words is almost properly manned, while at the same time Walnut Canyon, at its peak, runs 620 museum trips to 365 field trips.

This quarter reaches the peak of the year with an increase of 364 field trips and 483 museum trips over the preceeding quarter. The southern monuments are now on their low point and are furnishing only 27% of the field trips and 21% of the museum trips. They are handling 29% of the field visitors and 23% of the museum visitors. Of the 26,386 visitors for the quarter, the southern monuments handle 6,276 or 23%, and of the 35,207 contacts, they make 9,340, or 26%. The southern monuments make 148% contact on their visitors during the quarter while the northern monuments make 128%.

*****SWM*****



THE S upplement

S·M· MONTHLY REPORT

BIRD BANDING IN THE SOUTHWESTERN MONUMENTS

to Director,
Bureau of Biological Survey,
U. S. Department of Agriculture,
Washington, D. C.

Dear Mr. Director:

During the fiscal year 1937 bird banding projects in cooperation with your Bureau were carried on in five of the 26 national monuments which are administered by this office. This represents a decrease from nine stations to five, a situation caused by changing personnel and other factors.

No banding was done at Bandelier National Monument because Mrs. Earl Jackson, who was the operator at Bandelier, changed her residence to Montezuma Castle National Monument. This eliminated the Bandelier station.

The Chaco Canyon National Monument station was abandoned during the year, as the operator found he did not care to carry on banding in conjunction with his other work.

Milton Wetherill, our operator at Navajo National Monument, was away from Navajo National Monument all winter, the best banding season, being stationed at Walnut Canyon National Monument. He thus was able to carry on work at Walnut Canyon but the Navajo station failed to make any progress in 1937.

Lack of funds forced us to transfer our man away from Wupatki National Monument, so no birds were banded at that station, either.

With somewhat more adequate and stationary personnel in 1938, we hope that all stations, plus some new ones, will be banding regularly.

A total of 1,273 birds of 63 species were banded at the five stations. This total contrasts with 1,547 birds of 64 species banded in 1936. All stations increased their totals except Casa Grande which dropped from 738 to 99, due to the absence of Operator Dale S. King.

Brief resumes of the work at each station follow:

Casa Grande National Monument.

Two miles north of Coolidge, Arizona. Lower Sonoran zone.
Altitude 1,420 feet.

BIRD BANDING TOTALS, FISCAL YEAR 1937

Species	Casa Grande	Montezuma Castle	Pipe Spring	Tumacacor	Walnut Canyon	TOTAL	1936 Total	Banded in U.S. in 1936
1.Blackbird, Red-winged			18			18	0	2545
2.Bluebird, Chestnut-bkd					279	279	215	*333
3.Bluebird, Mountain					1	1	0	47
4.Bunting, Lazuli				1		1	0	33
5.Cardinal, Arizona		1		22		23	9	*1524
6.Chat, Long-tailed						0	2	64
7.Cowbird				1		1	0	*2021
8.Cowbird, Red-eyed				3		3	0	
9.Crossbill, Bendire					20	20	17	*41
10.Chickadee, Mountain					1	1	4	*62
11.Creeper, Rocky Mount.						0	2	*307
12.Dove, Inca	2			8		10	4	4
13.Dove, Western Mourning	1			4		5	17	*1654
14.Dove, White-winged				3		3	0	0
15.Finch, House	37		3	21		61	139	3352
16.Flicker, Red-shafted					1	1	1	28
17.Flycatcher, Ariz. Crst			5			5	3	3
18.Flycatcher, Ash-throat				1		1	0	*6
19.Flycatcher, Vermillion				4		4	2	2
20.Goldfinch, Grn-bkd						0	2	*40
21.Grosbeak, Ariz. Blue				2		2	0	0
22.Grosbeak, Black-headed				2		2	1	205
23.Grosbeak, RM Evening					3	3	0	340
24.Hawk, Desert Sparrow				5		5	0	*80
25.Jay, Arizona				1		1	0	0
26.Jay, Long-crested						0	2	*2716
27.Jay, Woodhouse						0	9	23
28.Junco, Gray-headed			10		11	21	77	*574
29.Junco, Montana						0	5	
30.Junco, oregonus		16				16	13	
31.Junco, Pink-sided		9			3	12	8	
32.Junco, Red-backed			3		10	13	54	
33.Junco, Shufeldt			91		22	113	25	
34.Junco, Slate-colored		1				1	0	
35.Kingbird, Arkansas						0	8	74
36.Mockingbird, Western				54		54	19	664
37.Nuthatch, Pygmy					38	38	46	113
38.Nuthatch, Rocky Mount.					5	5	8	
39.Oriole, Ariz. Hooded				4		4	0	39
40.Oriole, Bullock				2		2	0	99
41.Owl, Mexican Screech						0	1	0
42.Owl, Western Horned						0	3	*44
43.Phainopepla				2		2	4	12
44.Phoebæ, Say	3			9		12	34	49
45.Pyrrhuloxia, Ariz.				28		28	0	0

Species	Casa Grande	Montezuma Castle	Pipe Spring	Tumacacori	Walnut Canyon	TOTAL	1936 Total	Banded in U.S. in 1936
46.Quail, Gambel	8	5		80		93	68	61?
47.Roadrunner		1				1	5	7
48.Robin, Western					13	13	7	*6912
49.Sapsucker,Red-naped					6	6	4	*70
50.Sapsucker,Rocky Mt.						0	2	
51.Shrike, White-rumped			2	1		3	9	*82
52.Siskin, Pine					41	41	1	112
53.Solitaire, Townsend					2	2	60	61
54.Sparrow, Gambel	41	6	88	127	1	263	514	*4912
55.Sparrow, Lincoln	1			12		13	1	1413
56.Sparrow, W. Chipping		3			6	9	0	*3030
57.Sparrow, W. Lark				1		1	5	24
58.Sparrow,Nev.Savannah						0	1	*1115
59.Sparrow, Song			19			19	0	6670
60.Sparrow, W. Vesper			1			1	1	160
61.Sparrow,White-crnd						0	10	
62.Swallow,Rough-winged	1					1	6	44
63.Tanager, Western						0	1	64
64.Thrasher, Bendire				5		5	11	1?
65.Thrasher, Crissal				1		1	9	11
66.Thrasher, Palmer				5		5	2	*10
67.Thrasher, Sage						0	2	3
68.Thrush, Russet-backed						0	2	*1183
69.Titmouse, Gray						0	1	53
70.Towhee, Canyon				23		23	10	*50
71.Towhee, Green-tailed			6	7		13	11	42
72.Towhee, Spurred						0	3	*284
73.Verdin				1		1	1	3
74.Warbler, Lucy				1		1	0	*11
75.Waxwing, Cedar						0	1	2030
76.Woodpecker, Cactus						0	2	*3
77.Woodpecker, Gila				5		5	8	8
78.Woodpecker,White-brst					1	1	0	*78
79.Woodpecker, Mearns					1	1	9	*109
80.Woodpecker,RM Hairy						0	1	*78
81.Wren, Baird Bewick						0	3	*89
82.Wren, Cactus	5			1		6	43	49
83.Wren, Canyon				22		22	0	0
84.Wren, House			1			1	0	2722
85.Wren, Rock				1		1	0	2
TOTAL	99	42	219	448	485	1,273	1,547	
GRAND TOTAL, '36 & '37							2,820	

*---Group total which may include several races.

BIRD BANDING IN SOUTHWESTERN MONUMENTS (CONT.)

With Operator Dale King absent on a furlough, Junior Archeologist Charlie Steen was able to devote little time to banding, but managed to add 99 birds to the 1936 total. A very good percentage of returns were received on Gambel Sparrows. Data concerning these have not as yet been thoroughly studied, and will be described at the end of the 1938 season in which we hope to do very intensive trapping.

With some 450 bands out on Gambel Sparrows, and this species apparently returning to very restricted localities every winter, research on the Gambels promises to be productive.

Montezuma Castle National Monument.

On Beaver Creek, approximately five miles north of Camp Verde, Arizona. Altitude approximately 3,200 feet.

The report of Mrs. Earl Jackson, operator, follows:

All banding was done between February 12 and April 19, 1937. Total captures were 178, including 42 new birds, 5 returns, and 131 repeats.

The traps used were Government Sparrow Traps, and the bait was chick feed and occasional bread-crumbs. The only interesting thing about the method was that the quail, being somewhat tame, were kept from hurting themselves in the trap by my constant conversation, which seemed to soothe them.

The new birds banded were as follows:

Arizona Cardinal	1
Oregon Junco	16
Pink-sided Junco	9
Slate-colored Junco	1
Gambel quail	5
Road-runner	1
Gambel Sparrow	6
Western Chipping Sparrow	3
	<hr/> 42

The returns consisted of four Gambel quail which had been banded here by Norman Jackson, one of which repeated twice thereafter, and one Arizona Cardinal, which died from exposure in the trap.

At present there is no banding going on at the monument. I am, however, attempting a check on relative frequency of birds at Montezuma Castle, after the method described by Jean M. Linsdale, "A Method of Showing Relative Frequency of Occurrence of Birds", The Condor, Vol. XXX, pp. 180-184, May, 1928.

Pipe Spring National Monument.

Four miles from Hocesin, Arizona. Upper Sonora zone. Altitude 4,950 feet.

Operator Leonard Heaton boosted his 1936 total of 105 to 219 during 1937. Juncos and Gambel Sparrows make up the major portion of the total, although Heaton has trapped a nicely varied list. A very careful observer, Heaton is accumulating valuable information, and should begin to show worthwhile results during the 1938 season when those totals are compared to his 1937 work, his first year.

Tumacacori National Monument.

Nineteen miles north of Nogales, Arizona, in Santa Cruz Valley. Lower Sonoran zone. Altitude: 3250 feet.

Louis R. Caywood, operator, was able to catch a more widely varied list of birds than any of the operators at the other stations. 1937 was the first year in which trapping was carried on at Tumacacori, and the 1938 comparisons should bring valuable data.

Mr. Caywood's report follows:

"A total of 448 birds of 55 species were banded during the past year. Of these, four new species were banded which did not appear on the Biological Survey Species Total of 1936. These included the Red-eyed Cowbird, White-wing Dove, Arizona Jay, and Arizona Pyrrhuloxia. A total of 80 Gambel Quail were banded while the total for all stations in the United States for last year shows only 61 banded.

"This report is the first full year's report from Tumacacori National Monument. The banded birds represent only about one third of the species observed during the year. Although many birds cannot be taken for banding, a careful record is kept each month of birds observed, nesting and feeding habits, migrations, etc. In time these observations will be of value to anyone wanting specific information concerning birds in this section of the Santa Cruz Valley.

"Only one return has been reported so far from the birds banded under my permit. This bird was a Gambel Sparrow taken in Highlands, California."

Walnut Canyon National Monument.

Ten miles east-south east of Flagstaff, Arizona. Transition zone. Altitude 6,700 feet.

BIRD BANDING IN SOUTHWESTERN MONUMENTS (CONT.)

Operator Beaubien was absent from Walnut Canyon during part of the winter, and, consequently the station was somewhat upset, but Operator Milton Wetherill was able to carry activities there so the 1937 total of 435 exceeds the 1936 total of 337.

Two years of quite intensive trapping activity at Walnut Canyon show that this station is potentially one of our best. Junior Archeologist Beaubien in all probability will be stationed at Walnut Canyon permanently in future years and his interest in bird banding is sure to bring results.

*****SWM*****

In accord with a decision rendered by the United States Board of Geographical Names between July 1, 1936 and June 30, 1937, the following will henceforth be used in all Southwestern Monuments correspondence and publications:

Kachina Bridge: A natural bridge in Natural Bridges National Monument at the junction of White Canyon and Armstrong Canyon.

Owachomo Bridge: The smallest natural bridge in Natural Bridges National Monument in Armstrong Canyon at its junction with North Fork.

Sipapu Bridge: The largest of the natural bridges in Natural Bridges National Monument about three miles up White Canyon in section 35, township 36 S, range 17 E, San Juan County, Utah. The first two are changes in decision, the last a re-statement. The names Caroline, Edwin, and Augusta are no more to be used in National Park Service publications. Kachina is a term meaning a Hopi Ancestral Spirit, Owachoma means Rock Mound or Mound on Top, and Sipapu refers to the Portal of Life or Place From which the Spirit Comes.

Puerco River: Rises in township 16 N, range 13 W, McKinley County, New Mexico and flows west and southwest to join the Little Colorado in Navajo County, Arizona. Henceforth this stream will be known as the Puerco River and not the Rio Puerco or Rio Puerco of the West.

*****SWM*****

MONTEZUMA CASTLE IN 1894

By F. G. Steenberg, Fond Du Lac, Wisconsin.

I was twenty-five years old when I went to work on Martinez Ranch in Yavapai County. Arizona was a Territory. There were no railroads then between Prescott and Phoenix and, when we drove the team down to the ranch, we followed the surveyors' stakes of Diamond Joe's Railroad. It took two days to get to the ranch. I remember stopping over night at Robinson Ranch. (Arthur Robinson is still living in Prescott, hale and hearty.) Our ranch was on Martinez Creek, just over the mountains from Congress Mine which was Diamond Joe's gold mine. It had a forty stamp mill and was a big outfit for those days. There we got our mail and our brand, or iron. We branded the cattle with a J over an F (). There were no fences, no telephone poles, no roads, just trails; all open range.

The last of April, 1894, I pulled out of the ranch and went to Prescott, in a buckboard, to start for home. I went to the Burke Hotel, owned by Burke and Hicky, where my trunk was stored in the hotel cellar. (Prescott at that time was wide open. "Whiskey Row" was what main street was called. "Cob Web Hall" was one of the prominent saloons and gambling places; the old white Court House stood in the plaza.) I put on my "store clothes", went to the bank to get my small wad and gold watch which I had left there while on the ranch and then went the rounds to bid my friends good-bye. One good friend was Bucky O'Neil, who was sheriff at that time and had his office in the old Court House. (The nickname "Bucky", as I remember, was given him because he was fond of bucking the "Tiger" Roulette.) He was a very prominent and popular man, and well liked. His life-size statue now stands in the plaza in front of the new court house, and his life history is so well known I will not go into the details of that now. Well, Bucky and I had our visit and I started to bid him good-bye, and he simply would not hear of my going home without seeing something of Arizona. I remember he said that I had been down on that damn ranch, and had not seen a thing. He told me I must go to Montezuma's Castle, Montezuma's Well, Jerome, and several other places. I told him I had no horse or six shooter (we all packed six shooters in those days). He told me to go to the "Corral" livery stable and get a horse, go to Sam Hill's Hardware Store where I was loaned a forty-five Colts with five shells. Just as I was going out the store door, I happened to think of my wad and gold watch which I put in an envelope and Mr. Hill kindly stuck in their safe for safe keeping until I returned. (No receipt given or necessary in those days.) Bucky had written four letters of introduction, etc., for me; one to Hon. William O. Head at the trading post, Fort Verde, one to William Cliff on Beaver Creek, and the third to H. J. Allen, manager of Jerome Copper Mine. The fourth I cannot remember. (I still have two of these letters in my possession, and prize them highly.) The next morning, May 2, 1894, I got up early, had breakfast, and the girls in

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the hotel put up a small lunch for me. I got the little horse from the corral and started out, my lunch and small wooden camera rolled up in my coat back of the saddle, my six shooter stuck down in my pants with trigger guard caught on my suspenders. (I remember it wore a big hole in my best store pants on the trip). I rode out through Fort Whipple which was a real fort then with soldiers. A short distance from the fort I caught up with five soldiers on horseback who were looking for a lost stallion and we rode along for a short distance together. I remember asking one chap how far it was to Fort Verde and how long it would take to get there. He looked me over before he answered. (I did not look much like a cowboy as I had left all my ranch clothes, etc., on the ranch). Then he said it was fifty-eight miles, and if I would "kape going" would get there or sun down, but he said to "kape going". He was a good-hearted Irish lad, or rather full grown man. How I managed to follow the road, I don't know. There were several forks and trails. The track at times got very faint, but I followed the directions given by Bucky. The little horse kept walking, breaking into a slow trot now and then. I remember my good pocket knife wore a hole through my pants pocket and I felt it drop down my leg, but I was tired out and thought it would lodge in my boots and could get it later so I did not take time to stop. I plumb forgot I was wearing shoes.

It was hot down on the flats, and cold up on the mountains. I remember going along through prairie-dog towns which were interesting. There was no water nor houses on the entire trip until almost to Fort Verde. Way up in the Pine Mountains, I discovered a log cabin and rode up to it. A woman came out and I asked for a drink which she gave me out of a gourd. If I remember right, she said it was eight miles to Fort Verde. I finally came to another cabin, also high in the mountains; another drink from a gourd, and this woman told me it was fourteen miles to Fort Verde. I told her about the other woman saying only eight miles. "Oh!", she said, "You missed the 'forks'". So I had to keep going the fourteen miles to Fort Verde. Finally, just as the sun was going down, I could see the beautiful colorocks on the distant Verde River Canyon (just as I had been told). Then down on the flat and mountain turns, I lost the sight of Verde River and it was almost pitch dark, when I could finally see a group of buildings of the abandoned Fort Verde. The buildings were in a square, and away at the end I saw a light, rode up there, and it was William Head's Trading Post. Mr. Head opened the door--a heavy door with wooden bars across the inside for lock. I told him I had a letter for him from Bucky O'Neil. He said he would send a man around for my horse, but I told him I would take care of him myself as I was anxious to give him water, feed, and a good rub down with a handful of hay, which I did. Then I went into his store, or trading post and we had supper. He kept me up very late, for he wanted to visit about the "States" back home. If I remember correctly, he said he came from near Green Lake, Wisconsin, which is not far from Fond du Lac, Wisconsin, my home. "Bucky's" letter he left laying on the counter and I put it back in my pocket, which is the reason I still

have the letter to-day.

I told him where I was going, etc.,--Montezuma's Castle and Well, and then to Jerome, and back to Prescott that way, but he would not listen to my going back via Jerome. He said I must come back and stay another night with him and he would give me another horse to take back to Prescott, so I could change horses, and make better time. That did look good to me and I promised to come back his way. I therefore did not use Bucky's letter for Jerome Copper Mine, so still have that. We went to bed finally. Next morning at early breakfast, he told me how to cross the Verde River and where, and to be sure to look out for quicksands, to follow the river up stream, I think about three miles, until I came to a "dry wash" that was Beaver Creek. The Castle was up that dry wash, on the left-hand side. He also gave me two pieces of tallow candles to take along for the Cave Dwellings in Montezuma's Well. I followed his instructions, found the dry wash Beaver Creek, rode close to the left-hand side wall (very rough going) so as not to miss the Castle. Finally I thought I saw a Cliff Dwelling up high, and stopped the horse, dropped the reins over his head, and climbed away up on the rocks and finally found it was only a big crack, or small cave. I did this three times, and the last time was up high over the cotton trees. I looked up the canyon and, in an open space, saw a man on horse back. I climbed down, shook some of the sand out of my shirt front, got on my horse, and made for a faint trail where going was better. I finally came out where the man on horse-back stood. He had a rifle in holster under his leg and a six shooter in his belt, a gunny sack with horse shoes tied to pommel of saddle, and in his arms he had a bundle of wood strips which turned out to be strips of wood for honey boxes, when bent around to form the box. I could see with his hands full he could not get the drop on me, so I rode up and asked him if he knew where Montezuma's Castle was. "Well, I reckon", he said. He then turned around and told me to follow him up the trail. As we rode along, we talked, and I happened to ask him if he knew a William Cliff. "Well, I reckon", he said. It turned out that he was William Cliff. I told him I had a letter for him from Bucky O'Neil and he replied that he knew it. You can imagine my surprise: first man I had met on that long trip--there in that desolate canyon.

Well, to explain this strange meeting. Mr. Cliff went to Fort Verde from his home the night before to buy some horse shoes and material for honey boxes. He stopped over night with some friends in one of the abandoned barracks buildings, and the next morning went to William Head's trading post. Mr. Head told him I was looking for him, so he took some short cut trail to head me off.

There was no water in Beaver Creek. We rode along and finally Montezuma's Castle loomed up. We rode up close as we could. There was the Castle,--five stories high--that I had been looking for. I was very much excited and filled with awe. We just sat on our saddles for a

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short time and gazed. Finally I got my little wooden camera out and took a picture of the Castle from horse back. It seemed to me about impossible to climb up there, and we just sat still and looked and looked. Finally I said that I would like to try to climb up there and wondered if we could make it. William Cliff told me that he had passed the Castle for twenty-five years and had never been up there. "We will try it if you will come and stay with me to-night", he said. It turned out he wanted me to be with him when he arrived home as his good wife would scold him for returning so late.

We took the saddles off our horses, took off our belts and six shooters. He took his rawhide riata and I took my camera, and we went at that eighty foot climb. We pushed and pulled each up somehow--there was one short ladder, tied together with pieces of rawhide, that helped a bit. I think he told me some soldiers from Fort Verde, years before, made the ladder. There was one small opening on the right hand side. It was a broken opening, not a real door made by the cliff dwellers. Into this we crawled, and rested a bit and got our wind. The floors were covered a foot deep with bat deposits and the wooden beams overhead to support the ceiling were smoke stained. Over those round timbers were woven matting made from brush, then adobe cement, but there was no opening to rooms above. We worked our way slowly through small openings to the next room, and so on till we got to the last room on that level. Then there was a stepping stone in the wall, and a hole above to enter the second story. Then we had to work our way the entire length of the second story until we reached the last room and there was another stepping stone and hole above. So it was, till we reached the top of the fifth floor. This showed plainly the Castle was built in a way to best keep out enemies. The enemy could not rush up from the bottom to the top of the Castle; it was strictly built on the defensive plan. We found broken pottery and numerous corn cobs. I brought home all I could tie up in my coat behind my saddle. Back of some of the rooms were little openings into round caves, like dugout holes, where their food was supposed to have been stored.

On the top floor was the room for the Chief, right under the cliff. This top floor had a low wall in front with holes through it to shoot arrows or drop stones down on enemies. One of my pictures show this low projection, or balustrade, with William Cliff standing by. We also found a few arrow heads.

Two years after I explored this Castle, the Smithsonian Institution explored the Castle and found two mummies back in one of the little caves in the rear of one of the rooms.

We prowled, and dug around, for some time, and took pictures; then started down. Climbing down was harder than climbing up, but we finally made it, saddled up our horses, and started for Montezuma's Well some twelve miles away. The going was rough, there was no indication of the

big chasm we were coming to. The horses' hoofs clattered over the stones, then the big deep hole appeared and, within, the bottomless pit of clear spring water. There were some small cliff dwellings in the vertical walls which were inaccessible for us to try to enter. We rode around the vast hole until we came to the ruins of the lookout tower. Near there were stone stairs hewed out of the solid rock. We clambered down these stairs for a way, then a rough trail took us to the edge of the water. These stairs have almost disappeared. There we entered a series of cave dwellings. We lighted our candles and crawled in through small door-like openings. The ceiling was low so we could not stand upright but had to bend our heads slightly. The sides and ceiling was black with smoke but the floors were not covered with bat excrement as much as Montezuma's Castle floors. It really looked as if the cave dwellers had just moved out.

We picked up a number of small arrow heads and killed a rattlesnake, I remember, but what impressed me most was the stone door steps, or sills, that we had to step over going through the small openings from one cave to another. The door sills were about eight inches high, and were worn smooth and round; not by hob-nail shoes but by moccasin-clad feet. I stood and looked at these worn door sills and was filled with awe, thinking how many years it must have taken to wear down those door sills. It is too bad the present owners of Montezuma's Well have done so much digging for bones and old implements, for now it does not look like it did forty-three years ago.

In a way, Montezuma's Well surroundings impressed me more than the Castle as I had read about the story of Montezuma throwing his wealth into the well when he was driven from Mexico by the Spaniards. I could hardly tear myself away. The government really ought to include the well in its National Monument.

We finally took our last look and started for William Cliff's home. The day was getting late when we approached his log cabin in a grove, as I remember, of peach trees along the creek. He was ahead of me and I heard a woman's voice scolding him for being so late coming home. I heard him quiet her by saying "I have brought along a man from the States who is going to stay overnight". I rode up to the house and he introduced me to his wife. Then he handed her his honey box lumber, threw the bag of horse shoes on the ground, and said, "Come on". "I want to show you one thing more before dark." We rode on a short way and came out into a red granite canyon. The walls were just covered with ancient Indian hieroglyphics, or picture writing. We scraped the moss off and got two pretty good pictures of these (which I understand are the best in Arizona to-day). When I visited this place in April of this year, I took my photographs along and they checked up just the same as forty-three years ago.

I was very much impressed, I remember, trying to study out the different pictures and tried to imagine that long ago there must have been

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a vast meeting of Indians there and these pictures were perhaps the record of their meetings. I recall there was no picture of a horse, which showed it was done before Cortez's time, for he was supposed to have brought the first horse to America.

We left the picture rocks and rode back to William Cliff's log cabin. The kerosene lamp was lighted and supper was on the table. Mrs. Cliff was busy fixing the last touches of a bounteous supper. She was a dear motherly woman. There also were two young sons and a daughter Bertha, ten years old. We sat and visited around the table until bed time. The cabin contained only one room. A large white army tent was attached to the cabin in the rear where I was shown a cot with nice white sheets--the first I had seen in months. I slept so soundly that night I was not aware the entire family were sleeping right around me until I woke up in the morning and saw all the empty beds. After breakfast I took a picture of the family, and the two boys were photographed riding calves in the small corral.

During the supper the evening before, there was some jokes about a bald spot on my head. They wanted me in the morning to go to some hot soda springs near by and take a bath to make my hair grow. So, after bidding the family good-bye, William Cliff and I saddled up and rode quite a way to these hot soda springs. There were two large springs in a heavy grove of cottonwood trees. Around the edge of the springs was all white with soda. William Cliff undressed and jumped into one spring. I took the other, but more slowly for it did not look so very inviting. I crawled out on a fallen tree that lay over the spring, and let myself down into the water and, to my surprise, I found out I could not sink. The warm water came up with such force I bobbed around like a cork in a hose nozzle. I let go of the tree and, Oh! how I did enjoy that bath. It was the first real bath I had had for many months. William Cliff got out and dressed, but I hated to leave the warm water. There was sand that came up with the water, and the sand went between my toes. In fact, it was like a sand rub. William Cliff picked up my camera and took a picture of me bobbing in the spring, which I still have.

These hot soda springs now are owned by Mrs. Flora Finnie who conducts a dude ranch nearby.

After our bath, I bid William Cliff good-bye, and started back, by directions only, for Fort Verde which I reached about noon.

It might be interesting to state here that this ten year old, Bertha Cliff, and I have kept up all these long years a letter to each other about once a year.

On arriving at the William Head Trading Post, Fort Verde, about the first question I asked Mr. Head was: "Where is the horse you want

me to take to Prescott, for I am anxious to get started back, and think I can make the fifty-eight mile trip, with two horses, this afternoon?". But he told me that the horse had not been brought in from the ranch. He asked me in to have dinner and suggested spending the afternoon looking up the old "Apache burying ground" and some "petrified trees", which I did. Someway I do not remember now how either of these places looked, nor how I passed the afternoon. I was anxious to see the new horse and get started back to Prescott. Mr. Head and I had supper alone that evening, a short visit, then to bed.

The next morning I saw the horse I was to take back to Prescott. It was a small child's chunk of a pony that I suppose Mr. Head had wintered on the ranch for a friend of his in Prescott. Perhaps you can imagine my disappointment for the horse I was riding was a small horse and all the time on that long trip I kept wishing I had the large horse I used on the ranch (Old Roman we called him, for he had a Roman nose).

The pony had a long rope around his neck. I picked up the rope, bid Mr. Head good-by, mounted my horse, and started for Prescott, via a short cut, and according to Mr. Head's directions. I well remember he told me that around noon I would come to a house at a fork in the road where I could get water and something to eat. But I never saw the fork or the house.

The pony led along all right until we got behind a butte so he could not see the fort buildings. He just would not go any further. I pulled and tried to drive him, but he would not budge. I thought of turning him loose and have him go back but that was out of the question for Mr. Head had treated me so royally.

The pony must be taken those long fifty-eight miles and delivered in Prescott someway. I took my saddle off my horse and put it on the pony, and by rigging my spurs into his sides got him started. I found later that my horse would follow without being led. It was slow going and hard riding, but we kept it up until along late in the afternoon when I heard a noise behind me. On looking back I saw a four-horse stage coach coming. I pulled out of the road, took out a small medicine bottle half full of whisky that my mother had given me (for medicine, of course) before I left home and when the stage came up I told the driver I would give him a drink for a ride to Prescott.

"Tie the critters on behind", he said, "and hop up here". I did, and, tossing the bottle away, he loosened his foot on the long brake, cracked his whip, and we started. But there was an awful jerk and then a snap. The rope on the pony had broken. He refused to be led. The driver stopped, I caught the pony, and at the driver's suggestion, tied a long rope that was in the stage to the pony and got back beside the driver, holding the rope. I was nearly pulled over the top of the

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stage and we had to give that up. "Well pardner," the driver then said, "I have got to make the train with my mail. You will have to unload." That ended my stage ride, and how I did hate to leave that soft-cushioned seat.

I got down from the stage, put the saddle back on the pony, dug my spurs into his sides, and kept in sight of the stage all the rest of the way to Prescott.

I got to Prescott finally about dark, delivered both horses to the corral, paid my very small bill, and went around and told the man who owned the pony where it was. If I remember right, he owned a wholesale whisky store. He said "thank you" but did not offer me a bottle of whisky, or even a cigar. That was the end of my trip to Montezuma's Castle. It took four days. Last April I made the trip with automobile, checked out all the places mentioned, and ended the day at Jerome Hotel for the night.

Times have changed since Arizona was a territory, forty-three years ago--1894.

There was one more really strange incident which happened in regard to this trip.

Three years later, 1897, I went to Washington, D. C., on my wedding trip. While there I visited the Smithsonian Institution and discovered a large facsimile plaster cast of both Montezuma's Castle and Well. Of course, I was immensely interested in looking it over. It was perfect in every detail.

Years went on. I went to Washington again, and lost no time going to the Smithsonian Institution, for a look at my beloved Montezuma's Castle and Well. I could not find them although I looked all over. Finally I began to inquire where the plaster casts were. I was finally directed to go up on the third floor to a certain office. I entered the office. A kindly old gentleman was sitting behind a roll-top desk. "Why are you so interested in Montezuma's Castle?", he asked. I told him that I explored the Castle in 1894, just two years before the Smithsonian Institution explored it in 1896. He was a very kindly appearing gentleman and pleasant to talk to. In our talk I happened to ask him if he knew Bucky O'Neil, my old friend. He shot out his hand and said he wanted to shake the hand of an old friend of Bucky's. It turned out this gentleman I was talking to was at the head of the Smithsonian Expedition that explored Montezuma's Castle in 1896, and that Bucky O'Neil was with them and assisted. He said, "Now I am going to show a friend of Bucky's something few people see". He pulled out a drawer of his desk, took out a bunch of keys, and took me into the attic of the Smithsonian Institution. He let me roam around and examine things while he was looking for the plaster casts of the Castle and Well.

MONTEZUMA CASTLE IN 1894 (CONT.)

He finally found them and pulled them out into the aisle. He then told me that they were going down stairs where they belonged and that the next time I came I would find them there.

When I said good-bye to him in his office, he handed me his card, and told me to be sure to call on him whenever I came to Washington. (Sorry that I cannot give you his name, for I cannot locate his card.)

Time passed and I went to Washington again--went right to his office in Smithsonian Institution for another visit, only to find the dear old fellow had passed on.

I think you will admit that this chance meeting was a strange coincidence.

*****SWM*****

A METHOD FOR PRESERVING HABITAT MOUNTS OF INSECTS

By Donald De Leon,
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ABSTRACT

A method of preparing insect larvae in a dry but life-like form is described. An account is given of the preparation of habitat mounts of barkbeetles using this method of preparing the immature stages.

Although a good method for the preservation of insect larvae in a dry though life-like manner has been employed in Europe for some years, it seems to be little known or used in the United States. By employing this method of preserving the immature stages and then replacing them in natural positions in or on their host, a very natural, instructive, and attractive mount can be made. This method seems particularly well adapted for the presentation of habitat mounts of barkbeetle life histories and associations.

The method described here of dehydrating and preserving the immature stages seems to be rather widely known in Europe, but no published references to it can be found.

EQUIPMENT USED

10 Stender or Coplin Jars or similar containers.
Alcohol: 70%, 90%, absolute.
Xylol.
Turpentine U.S.P.
Wire baskets.

A METHOD FOR THE PRESENTATION OF HABITAT MOUNTS OF INSECTS (CONT.)

The jars were set up with the above reagents in the following order and proportions: 70% alcohol; 90% alcohol; absolute alcohol; absolute alcohol; equal proportions absolute alcohol and xylol; xylol; equal proportions xylol and turpentine; turpentine. The ground glass portion of the lids of the jars were coated with vaseline to prevent evaporation.

The wire baskets were made from #56 copper gauze but a much coarser mesh could be used if only large specimens are to be treated. The size of the baskets would naturally depend on the size of the material to be used. Those used by the writer were about one inch high and slightly over one half inch across, and made from wire gauze about $1\frac{1}{2}$ " by $2\frac{1}{2}$ " in size.

METHOD

In order to get satisfactory results, living specimens should be used. These are dropped into water ready to boil, which is then covered and set aside to cool. Larvae that tend to curl up when placed in hot water, as clerids, ostomatids, and dolichopodids seem to straighten out better if left in the water until it becomes tepid, than if removed from the water when it is hot. When the water has cooled the specimens are pricked one or two times, depending on their size, with a finely pointed needle, dropped into a basket and placed in the first jar of the series, containing 70% alcohol. The material is run up through the succeeding liquids at hour intervals. When the specimens finish their second bath of turpentine they are shaken out of the basket onto some sort of blotting paper and allowed to dry. It takes about 6 hours for them to dry thoroughly at ordinary room temperatures. When dry they are ready for use. Larvae several years old, prepared in this manner and mounted on pins were observed in the forest insect collection of the Hochschule fuer Bodenkultur, Vienna. Acknowledgment is made to Dr. Erwin Schimitschek of the forementioned institution, who first outlined this method to the writer.

When many larvae are run through together, a white precipitate is often present on a good many of them but this can be easily removed by moistening a camel's hair brush in turpentine and wiping the precipitate off. Although the larger larvae shrink noticeably, the shrinkage of the smaller larvae is not usually appreciable. A cerambycid larva that was 34 mm. long when cooked, was 29 mm. long after it had been subjected to the above outlined treatment; otherwise it was in excellent condition and undistorted. Colored larvae, as clerids, lose a bit of their color when handled by this method; white or whitish larvae come out almost pure white; and the sclerotized portions of the body are unaffected. Though the treated specimens are rather brittle, they will stand considerable handling either with the fingers or with forceps. To eliminate this brittleness a three to eight hour bath, made up of 9 parts turpentine and 1 part rubber cement by weight, was given some of the

A METHOD FOR THE PRESENTATION OF HABITAT MOUNTS OF INSECTS (CONT.)

specimens after they were taken out of the last jar containing turpentine. This treatment makes the material more flexible but adds a shine and it is doubted if it would work on any but glabrous or nearly glabrous larvae. Larvae have been left in any one of the baths several days without any apparent injury, except that the colored larvae may be considerably bleached when left in xylol or turpentine.

Several larvae such as tipulids and lucanids which at the time of treatment did not have much of a fat-body came through the baths in worthless condition. Best results seem to be had from good fat larvae; apparently the method is suitable only when there is a considerable layer of fat beneath the cuticle that can be coagulated, like an egg, by boiling. Occasionally, however, flattened larvae, (*Melanophila*) that apparently had a good layer of fat, were rendered useless by this treatment for any purpose but the waste basket.

PREPARATION OF MOUNTS

The writer in making up a series of habitat exhibits of bark-beetles used 5" x 6" Riker mounts. Part from bark-beetle-infested lodgepole pine, sugar pine, and ponderosa pine was cut to fit the glass half of a mount snugly. Rubber cement thinned with gasoline was then applied to the inner surface of the prepared section of bark to liven its appearance, hold the frass in place in the galleries, and keep the inner surface of the glass from becoming covered with dust. Shellac would probably do as well but was not tried. When the cement was dry, the treated specimens were replaced in their natural positions with glue. Thus a complete picture of the appearance of the inner bark of an infested tree was obtained. Not only was the work of the insect to be seen but the insect itself in all stages and surrounded with its associated species. On the outer surface of the bark such species as adult clerids, ostomatids, cucujids, etc., were glued to show the insects found in this habitat. Insect points about the color of the cambium and on which a number was printed at the larger end of the point were fastened to the surface pointing at the desired object. The number referred to an accompanying explanatory sheet, which gives the name of the insect and a short account of its habits and importance.

The completed bark sample was then placed in the glass half of the Riker mount and pinned in as though it were the lower half but so the specimens did not touch the glass. With thin bark as that of lodgepole pine, the glass half of an ordinary mount was used and another piece of glass was cut to fit flush with the outer sides of this half and fastened down with Scotch tape in the same manner as one would use passe-partout. With thick bark, Riker mounts 2 7/8" deep can be used and cut down to the thickness of the bark. In this manner both the inner and outer surfaces of the same piece of bark were used to show the internal and external appearance of the bark of an infested tree.

A METHOD FOR THE PRESENTATION OF HABITAT MOUNTS OF INSECTS (CONT.)

If habitat mounts are not desired, cotton mounts can be prepared showing the common insects found in a given species of tree.

As the brood of the western pine beetle is entirely concealed in the outer bark of its host, it was necessary to make up a mount of this insect to make an axe-like cut at one corner of the bark sample to expose the brood galleries. Specimens of the larvae and pupae were then fastened into these exposed galleries.

To improve the appearance of the mounts requiring the use of collars, the inner surface was painted a dead black with india ink.

This method of preservation will probably work for small caterpillars, fly larvae, and hymenopterous larvae, as well as other beetle larvae. By its use it is possible to make instructive mounts rather quickly and cheaply and should aid materially in making up worthwhile mounts for class-room work and exhibition purposes.

Acknowledgment is made to Mr. J. M. Miller and Mr. R. L. Furniss, both of the Bureau of Entomology, for suggestions and criticisms during the preparation of the mounts.

*****SWM*****

ONE SQUARE MILE

By Donald Culross Peattie

(From September-October issue of "Conservation". Used by permission of The American Forestry Association.)

It was twenty-four years ago that I first saw Kennicott's Grove from afar, its four-century-old bur oaks and its ancient shagbark hickories rising high above the watery green of the prairie. I hadn't then heard of Robert Kennicott, the foremost pioneer naturalist of Illinois, who was to die, at thirty, in Alaskan snows.

I didn't know that he had already collected all the birds and mammals, the slough mollusks, and the wood salamanders of this, his boyhood home.

I hadn't even heard of the romantic associations of the old prairie groves, those wooded islands rising on long low ridges out of the aboriginal grass sea. All of Illinois history is filled with the story of the groves. Indians and first settlers made straight for them, like the passerine birds on their migration. But they didn't teach history that way in my school, and I knew then little about natural history.

As it came about, I was to see many other sights and learn a little about the fauna and the flora of a number of places, before I found myself actually living at Kennicott's Grove. In the meantime I hadn't...

at any time supposed that, delightful as my personal associations with it were, this square mile of Illinois land was, biologically, worth much attention. After all, Robert Kennicott himself had left it.

But in the fullness of time, chance decided that Kennicott's Grove was precisely where I was to remain without leaving it even for a night, for three years, winter and summer. Intimacy with this strictly parochial view of Nature opened my eyes to its beauty. But I learned also the value of knowing some one thing, at last, with a certain degree of thoroughness, be it only my one square mile.

With the problem thus neatly delimited one may almost accomplish at times the ideal of every field naturalist, which is to allow not a flock of Lapland longspurs to escape him, not a wail weed to evade him in the ditches. Daily diaries make every detail a matter of dated record and of first-hand evidence that the faults of memory cannot damage.

First of all there is, for the parochial naturalist just as for him who roams a continent, the Academic task of naming the beasts and the plants. If you are surveying a vast province, omissions are excusable. In a microcosm you must be able to call by its name everything that flies or runs or grows. Then come maps; the locations of bogs, of conifers, of orchard trees, of cat-tail stands. These matter vitally when you begin to study the animals that affect those habitats.

So, after mere systematics comes ecology. One discovers that the low swampy woods, the elm-linden association of the botanists, is the green heron association of the birds. Exploring my ponds, I learned that there is an antipathy between cat-tails and bulrush and that where they grow unlike sorts of birds will nest, and from their waters pipe different frogs.

Almost imperceptibly my notes began to yield up the details of what Emerson calls the punctual almanac of the birds. My Grove diaries tell the story of the great drought of 1934, of the rabbit cycles, of the mouse-year of 1935-36.

It was in 1935 that the whole neighborhood began complaining of the damage done to fruit trees and shade trees by some creature that was girdling the bark. Little teeth had sunk to the tender green cambium. Who was at fault, and what could be done about it?

Squirrels, I knew, nibble the buds off the oaks in the great hunger of early spring. But I did not believe that even the ratty little gray squirrel would girdle trees. Porcupines girdle trees, high up, and one year there had actually been a porcupine and there might be another. But these girdlings were too low for a "porky". They were even too low for a rabbit's toothwork.

ONE SQUARE MILE (CONT.)

Two possible culprits remained on the short list of some twenty-eight Grove mammals. The mole mouse is a notorious girdler of trees, but he dines upon the bark of the root. So that he was pretty well exonerated although I had to admit that I knew almost nothing about mole mice.

So secretive are their ways, so cryptic their life habits, that even the owls, the most relentless mousers of the wood, seldom catch one to eat if one may judge by the contents of their pellets. Science cannot yet tell us the frequency of mole mouse breeding, and Kennicott gave no idea of their numbers right here in the Grove. In short, here was an animal about which less is known than about the African elephant, though it is a great deal more important to us.

But alluring as the trail of the little mole mouse might look, the clues in the crime--anthropomorphically speaking--of girdling trees led to the remaining suspect, the prairie meadow mouse.

And suddenly there were meadow mice everywhere. I met them on the road, and picked them up in my hands! As winter came on, the snow was crossed with endless mouse tracks, and tunneled with miles of white microtine subways.

Hawks came, with the fall migration, and stayed all winter, breaking all previous records both for individual abundance and wealth of species. Never before had we seen so much of the owls.

And we began to find dead mice. To a naturalist a dead animal in the woods is always a challenge. Of what did he die? If he has a bullet wound it may mean that hunters are trespassing. Marks of a battle indicate fierce contests for survival with other creatures. Is the balance of nature tilting? If there are no outward indications of death, has the mammal been poisoned? Did he die of starvation? Or have parasites or diseases begun to check a super-abundance, a dangerous fertility?

These questions it is the business of any woodsman or naturalist to answer. For animals, and plants, are not merely species which one may have fun in identifying. They are living things with histories even now in the making. Dead, they are still biologically significant.

The next spring, after the prairie had been burned off, I discovered that the summer nests of the meadow mice being compact and damper did not burn completely, and it was possible as never before to see every one.

So I counted every nest on an area which I measured and found to contain 3,600 square feet. There were thirty-two nests on this quadrat. Each nest is said to be occupied by a pair of mice, each pair

ONE SQUARE MILE (CONT.)

making but one nest. How many meadow mice had there been on my one square mile of land in the great mouse year? If all the land were suitable for mouse nests, that would give us half a million little tree-girdlers.

But now my maps, so toilsomely made, and in such detail for every shading of ecological habitat, proved their worth. Potential meadow-mouse country was less than half the area. Even so that left us with a quarter of a million of these somehow likeable little rascals. Allow for wide errors; say there were only a hundred thousand individuals on my one square mile. Even so, what wonder that our trees were girdled? That owls and hawks were never so plentiful?

The great mouse year came to an end, and many causes for our deliverance might have to be thanked for it. If, however, one is to predict the next recurrence of a mouse plague, one would have to understand the reasons for mouse booms as well as mouse depressions.

If called upon to make a guess I should assign some of the following reasons for mouse years: A sudden falling off in mouse parasites. (But what controls this cycle I will not even guess!) And a diminishing in the numbers of their predators--weasels, shrikes, hawks, owls, herons, and others.

And finally, no doubt, there must have been a previous increase in the abundance of mouse food, which is largely vegetable. What causes mouse manna in a richer harvest of the little wild bulbs and tubers and corms of our native wildflowers, into which the hungry, keen rodent teeth sink so eagerly, which clever little paws roll into the subterranean chambers and horde? I found that I did not know.

Probably freedom of the plants from their parasites was part of the answer. But of the billions of nematodes in the soil, of cryptic fungi, some harmful, some beneficial, of the bacteria without which life could not go on at all, I knew practically nothing.

Robert Kennicott lived in an age that was, zoologically, closer to unspoiled Eden than ours. But the natural history of Kennicott's Grove is not impoverished or utterly tamed. It still carries great biological weight but instead of weighing in terms of the tons of the thundering buffalo herd, we calculate the ounces of food per day or per hour consumed by creatures like the shrews and mice.

Once we had the howling wilderness; now we have a subtler Nature, and, I suspect, there is distinctly less of the antler-trophy about it, and somewhat more of modern science. For the essence of natural science is long and minute observation, exact description, experiment, control, and prediction. These may be encompassed as well upon the small scale as the large. Perhaps far better on the small scale. What natural

history needs is chains of small-scale observers--endless chains of them.

For life itself is an endless chain. I cited the case of the mouse year as a single instance of it. All the time, in my minute field of vision, other cycles were exhibiting themselves, other problems were presented.

Absorbed in them, one soon drops the amateurish emphasis upon rarity, upon the occurrence of "strays" in the local plant and animal lists. It is the "everyday" organisms, and life's complexity, its vital inter-relations, its unbelievable symbiotic systems, that matter. In your own neighborhood, as in mine, almost all problems are still unresolved, and everywhere, like the spring choir of the marshes, rises the triumphant canticle of life's beauty.

*****SWM*****

RUMINATIONS

In which the Boss rides one of his hobbies; being some further remarks on visitors and museums.

The other night when we were welcoming the newly married Steens into our midst at a picnic supper, I ate two buns, two pickles, a half pint of beans, and some other indigestibles; went home and went to bed and to sleep like a baby; but at one O'clock I woke up and spent a couple of hours wondering what a museum was. What the pickles couldn't do, the museum problem did without half trying. The next morning Don and I were holding a session and he found that the late Mr. Webster declared a museum to be a place where you studied. We promptly rejected that definition and then he found that Mr. Webster also said a museum was "a repository or a collection of natural, scientific, or literary curiosities or objects of interest, or of works of art". Our museums might qualify under that definition; a collection, I take it, being three or more objects. Please note that he doesn't say anything about a large building with an ornate entrance, glass cases, artistic labels, or the many other things we associate with museums; the museum is a collection of objects of interest. So Don and I have found out what a museum is.

In defining a museum contact however, we have to be a bit arbitrary since Webster seems to have nothing to offer.

In its simplest statement, we think that when a visitor meets a museum in the presence of a guide who talks about the museum to the visitor, we have a museum contact. We grant that in some cases this is only a theoretical contact; that had we a device which would register the intensity of the contact the result would often be a blank, but, lacking such a device, we have to assume that each museum talk is a contact on each visitor who hears it.

Since we have no way of gauging the intensity of the museum contact,

RUMINATIONS (CONT.)

and since we do want to make comparisons of one museum's pulling power against another, of one guide's talking power against another, and of one visitor's reaction against another, we have made diligent search for some sort of measuring stick which, poor as it may be, will be better than nothing. The visitor, having paid nothing to get into our show, will walk out on us the minute his interest flags, and therefore we made the assumption that the time of his stay would be the rough measure of whether or not our information was registering on his mind. We are well aware that there are several other factors entering into the loss of interest on the part of the visitor; that one visitor can get more information in five minutes than another can in twenty minutes; that some visitors stay out of courtesy rather than walk out in the middle of a museum talk. These objections we hold are all flattened out in the attendance curve of the first ten thousand museum visitors. Find the average museum stay of about fifty thousand visitors and our theory is that the next fifty thousand, under the same conditions of seasons, personnel, unchanged exhibits, etc., will stay the same average time. Several of these factors are variable and it is our theory that varying those factors which will cause the next fifty thousand visitors to stay, on the average, a few minutes longer will be rendering them a better service. Many men have contested this point with me but I have yet to find one who will go so far as to argue the reverse; that the more we can shorten a visitor's stay in the museum the better service we are giving him. (Because one visitor stays ten minutes and another thirty we cannot say the thirty minute visitor has profited three times as much as the ten minute visitor.) If 50,000 visitors average 19 minutes in your museum and you make some rearrangement by which the next 50,000 visitors will average 22 minutes, we hold that you have improved your service; if on the other hand you make a rearrangement and find your next 50,000 visitors have averaged 15 minutes, I would not be inclined to agree with you that the improved appearance of your museum justified the change and that the decreased time meant nothing. We will be glad to hear any arguments in favor of shortening the average stay of the second 50,000 and its evidence of improved service, but they must be good.

As a matter of fact the attendance seems pretty regular on a less number than 50,000. We put 9,621 visitors through six museums and got an average time of 18.8 minutes. This was between October and December. Between January and March, on 11,123 visitors the average time was 18.5 minutes. Between April and June, on 14,789 persons the average was 19.7. Between July and September, on 17,202 persons the average was 18.5. Now if, next year in these same quarter periods, we averaged three minutes higher, would you say it was an indication of better service or poorer service, or that it was no indication at all?

All this rumination is caused by Dave Jones writing in and saying that we have him wrong; that these last two or three months he has

RUMINATIONS (CONT.)

been reporting museum contacts he hasn't had a museum, he just takes the visitors into a room where there are several original beams in place and wanders off into an introduction to the archeology of the Southwest and that of the Wupatki region, bringing in the effect of Sunset Crater, and, in general, doing what we try to do with our museum talk where we have museums, and should he stop doing it and if it isn't a museum contact, what is it?

Here is what we wrote Davey:

"My dear David:

"I should have answered your letter of the 30th. about museum contacts before this but we have done some talking and I have done a lot of thinking about it and so have held you up.

"Most certainly I do not want you to stop making these contacts, nor do I want them reported as a part of the field trip. The thing to do is to get a few artifacts together and build a museum around your talk. I will admit this is a little different from the accepted practice of first catching your museum and then starting a museum talk, but I see no reason why the thing shouldn't work backward as well as forward and just because it hasn't been done before is no reason for our not doing it.

"So my suggestion is that, since you have called it a museum contact, you just go ahead and put a museum around it. Nobody knows yet just what makes one of our museums click but I suspect that the main ingredient is a guide who knows his stuff and likes to talk to visitors. Given that base to build on and a few broken pots, a stone axe or two, a couple of metates and manos and the museum is on its way and the visitor can be held twenty minutes. Add a larger collection of material, plenty of glass cases, a lot of labels and some art work, and the visitor can be held about twenty minutes. Fill a room pretty well full of pottery, have few or no labels, and the visitor can be held about twenty minutes. Run half the stuff back in storage, scatter the rest under glass with lots of labels, and the visitor can be held about twenty minutes. Take the cases away, put the remainder of the stuff on one table of odds and ends and, with Paul Beaubien talking, the visitor will stay about twenty minutes. Take the rest of the stuff away, remove the table and, with Davey Jones talking, the visitor can be held about twenty minutes.

"The answer to all this is still a little beyond us but you have contributed a new angle and can help out by going on as you have been going and turning in your records as you are doing."

Cordially,

The Boss

SOUTHWESTERN MONUMENTS

MONTHLY REPORT



D E C E M B E R - - - 1 9 3 7

DEPARTMENT	OF	THE	INTERIOR
NATIONAL	PARK	SERVICE	

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SOUTHWESTERN MONUMENTS PERSONNEL

HEADQUARTERS, Southwestern Monuments, Coolidge, Arizona: Frank Pinkley, superintendent; Hugh M. Miller, assistant superintendent; Parke Soule, chief clerk; Millard Singerman and Luis A. Gastellum, clerk-stenographers; J. H. Tovrea, assistant engineer; Dale S. King, assistant park naturalist; Charlie R. Steen, junior park archeologist; Natt N. Dodge, junior park naturalist; Ira G. Goodwin and William Sharpe, CCC clerks; F. E. Stonehocker, machinist; J. L. L. Baehr, utility man.

<u>FIELD STATIONS</u>	<u>AREA</u> in Acres
1. <u>Archae</u> - Moab, Utah; Harry Reed, custodian- - - - -	4,520.00
2. <u>Aztec Ruins</u> - Aztec, N. M.; T. C. Miller, custodian - - -	25.88
3. <u>Bandelier</u> - Santa Fe, N. M.; C. G. Harkins, custodian - -	26,026.20
4. <u>Canyon de Chelly</u> - Chin Lee, Ariz.; Johnwill Faris, cu. -	83,840.00
5. <u>Capulin Mountain</u> - Capulin, N. M.; Homer Farr, custodian-	680.37
6. <u>Casa Grande</u> - Coolidge, Ariz.; A. T. Blacknell, custodian; David J. Jones, park ranger; John Cooks, James Rogers, Strimple Coyle, Marvin Hale, CCC guides - - - - -	472.50
7. <u>Chaco Canyon</u> - Chaco Canyon, N. M.; L. T. McKinney, cu. -	21,512.37
8. <u>Chiricahua</u> - Douglas, Ariz.; Frank L. Fish, custodian; Homer Bennett and William Stone, CCC guides - - - - -	4,480.00
9. <u>El Morro</u> - Ramah, N. M.; Robert R. Budlong, custodian - -	240.00
10. <u>Gila Cliff Dwellings</u> - Cliff, N. M.; No custodian - - - -	160.00
11. <u>Gran Quivira</u> - Gran Quivira, N. M.; George L. Boudner, cu.	610.94
12. <u>Hovenweep</u> - T. C. Miller, Aztec, N. Mex., in charge - - -	285.80
13. <u>Montezuma Castle</u> - Camp Verde, Ariz.; Earl Jackson, custodian; Jesse D. Jennings, park ranger - - - - -	560.00
14. <u>Natural Bridges</u> - Blanding, Utah; Zeke Johnson, custodian	2,740.00
15. <u>Navajo</u> - Kayenta, Ariz.; John Wetherill, custodian; Milton Wetherill, park ranger-historian - - - - -	360.00
16. <u>Organ Pipe Cactus</u> - Ajo, Arizona; no custodian- - - - -	330,670.00
17. <u>Pipe Spring</u> - Moccasin, Ariz.; Leonard Heaton, actg. cu.-	40.00
18. <u>Rainbow Bridge</u> - Tonalea, Arizona; no custodian - - - - -	160.00
19. <u>Saguaro</u> - Tucson, Arizona; no custodian - - - - -	63,284.00
20. <u>Sunset Crater</u> - Flagstaff, Arizona; no custodian- - - - -	3,040.00
21. <u>Tonto</u> - Roosevelt, Ariz.; Thomas Onstott in charge- - - -	1,120.00
22. <u>Tumacacori</u> - Box 2225, Tucson, Ariz.; L.R.Caywood, cu.- -	10.00
23. <u>Walnut Canyon</u> - Flagstaff, Ariz.; Paul Beaubien, junior park archeologist - - - - -	960.00
24. <u>White Sands</u> - Alamogordo, N. Mex.; Tom Charles, custodian; James B. Felton, park ranger- - - - -	142,987.00
25. <u>Wupatki</u> - Flagstaff, Arizona; no custodian- - - - -	35,865.30
26. <u>Yucca House</u> - Cortez, Colo.; T. C. Miller, Aztec, N. Mex., in charge - - - - -	9.60
Total area (in acres)- - -	724,659.96
(1,132.2 square miles)	

OPENING

By Frank Pinkley, Superintendent,
Southwestern Monuments, Coolidge,
Arizona.

Dear Mr. Director:

December as a whole over the district has been good without taking any prizes. Christmas business over our whole district has been reported as good to excellent. In the southern part of the district, the cotton crop is being gathered and marketed and money is changing hands freely but the greater part of it is paying debts and straightening up accounts, the growers complaining that there has been little or no profit in the crop this year.

Winter tourist traffic is coming into the Phoenix and Tucson country but is expected to be much heavier after the first of the new year. It is too early to say yet whether it will be heavier than last year; our southern monuments do not show, on the whole, that the traffic is or will be heavier.

Few personnel changes occurred. Mr. H. Summerfield Day, Ranger at Aztec National Monument resigned, leaving the monument the 15th. At Casa Grande, Stremple Coyle was added to the roll as a CCC guide. At Chiricahua, Elijah Alton, a CCC guide, was replaced by William Stone. At Natural Bridges, Zeke Johnson has changed from a full-time resident employee to a part-time basis and is in Salt Lake City. Johnwill Faris at Canyon de Chelly and George Boundey at Gran Quivira have returned to duty from annual leave. Custodian Caywood returned to duty at Tumacacori from his work at Berkeley. Mr. J. L. L. Baehr, headquarters handy man, was on sick leave several days during the month.

Working conditions for personnel have improved considerably in the last few months with the purchase of several new cars to replace very old equipment. This month saw new oil burning stoves installed at Tumacacori and a refrigerator at Walnut Canyon.

We were unavoidably undermanned during the month at Tumacacori and had bad housing conditions at Navajo, El Morro, and Walnut Canyon. We had bad water conditions at El Morro and White Sands.

Finances continued to worry us and we continue to watch all possible corners. It looks like we may whangle through the fiscal year under the present handicaps but if anything else comes up between now and June 30 which will cost us money, we are sunk.

Construction work continues at our CCC camps at Bandelier and Chiricahua. At Bandelier the new Lodge group of buildings as a whole are beginning to take shape and we think we are getting something there of which you can be very proud. The work at Chiricahua is holding up the same high standard which you saw upon your visit last fall.

We have brought a spur camp from Chiricahua up to Casa Grande, a matter of over 200 miles, and it is now settled down and beginning to

OPENING (CONT.)

turn out work. We had to get special permission for this spur camp and think it is the longest distance a spur camp is being operated in the country.

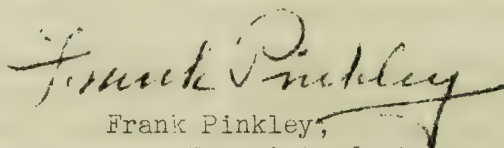
We have a mobile unit of 24 Indian boys in a CCC camp at Chaco Canyon doing some fine ruins stabilization work. So far as we know, this is the only camp of its kind in the United States. We are working it in cooperation with the Indian Service and we find them just as fine to work with as the Forest Service.

We might call your attention to the fact that we are running one CCC camp at a distance of about 300 miles, another at a distance of 200 miles, and the Mobile Unit is working at present about 300 miles from our headquarters. For the two camps, we keep a complete check of finances, stores, equipment, etc., at headquarters. We think this is about the longest distance operation of CCC camps in the country. While this long distance operation naturally increases the paper work, these two camps do not have their efficiency decreased thereby but are known as outstanding camps in the Southwest by the inspectors, auditors, and other general officials who visit the various camps in the district.

Our real problems are not at the points where we have CCC camps but at the monuments where we do not have them. We are going behind year by year on construction because we cannot get construction money in our regular appropriations; we have not yet been able to share enough in the emergency funds, and we cannot use CCC camps because of the comparatively small size of our projects. Among such problems a typical example is the great need of a house, garage, and water supply at El Morro National Monument. Another would be a similar set-up at Navajo National Monument: another set-up at Wupatki: another at Walnut Canyon, and so it goes.

Please note the amount of this monthly report which is given to the real thing upon which the Park Service is founded: protection and visitors. This is not accidental. In any report to you we must deal with technical matters of construction, finances, general personnel, etc., but I think you will see through this report more than any other which comes to you an intense interest in the visitor, what he is doing, where he is going, how best to reach him through museums, guided trips, and so on. And this is as it should be, for without the visitor, the Park Service would have little need for existence.

Cordially,


Frank Pinkley,
Superintendent.

CONDENSED REPORT

IN WHICH ARE GIVEN THE HIGHLIGHTS OF THE MONTH

Coolidge, Arizona,
January 1, 1937.

The Director,
National Park Service,
Washington, D. C.

Dear Mr. Director:

The Condensed Report for the month of December, 1937, follows:

TRAVEL	Dec. 1937	Dec. 1936	Dec. 1935	Travel year To Date
Arches	50	----	----	236
Aztec	503	576	391	2,156
Bandelier	263	227	150	2,178
Canyon de Chelly	4	----	23	198
Capulin Mountain	300	800	500	2,000
Casa Grande	2,931	3,052	2,135	8,077
Chaco Canyon	87	220	330	612
Chiricahua	265	273	120	1,709
El Morro	73	75	----	459
Gila Cliff Dwelling	0*	----	----	25
Gran Quivira	199	174	200	610
Hovenweep	0*	----	----	0
Montezuma Castle	403	512	568	1,842
Natural Bridges	0*	----	----	147
Navajo	2	----	----	74
Organ Pipe Cactus	700*	----	----	2,100
Pipe Spring	142	92	214	409
Rainbow Bridge	0*	----	----	66
Saguaro	2,000*	1,000	----	5,100
Sunset Crater	200*	141	55	1,383
Tonto	360	252	362	860
Tumacacori	846	1,375	1,311	2,550
Walnut Canyon	270	230	283	1,655
White Sands	1,830	3,864	1,840	15,001
Wupatki	75	108	63	250
Yucca House	0*	----	----	70
Totals	11,503	13,021	8,525	49,767

* Estimated

Travel for the month of December shows a decrease over that for December, 1936, and also a drop from the attendance at our monuments

CONDENSED REPORT (CONT.)

in November, 1937. A detailed discussion of the possible causes of this decrease is made on pages 471 and 472-a of this report. Travel statistics for December are tabulated on Page 472.

000 GENERAL

010 Matters of Unusual Interest or Importance.

Tumacacori: The new combined Administration Building and Museum has been completed and accepted by the Superintendent (see p. 443).

Chaco Canyon: A survey of the various ruins in the monument by the custodian indicates that the weather has damaged several of them and that there is certainty of considerable loss in the near future. (See p. 457-8).

020 Weather

Throughout the area in which the Southwestern Monuments are located, weather conditions appear to have been unusually uniform with warm sunny days during the first part of the month and storms and cold winds the latter portion. This has been especially true in the northern and high-elevation monuments. In the southern monuments, the weather has been warmer than normal throughout the month.

022 In Approaches

Chiricahua: The Onion Saddle road is reported blocked by snow and will probably be closed until next April (See p. 429).

100 ADMINISTRATIVE

123 Visits by National Park Service Personnel

Aztec Ruins: J. Faris, W. Yeager.

Bandelier: Erik Reed, F. Russell, K. Ferris, L. C. Fuller, A. Merkle, H. Cornell, M. F. Christianson, M. J. McCollm, J. Diehl, H. E. Rothrock, W. H. Wirt, W.W. Yeager, H.L. Bill, F.H. Strieby, F. L. Cook, and Hugh Miller.

Canyon de Chelly: R. Budlon, J. Tovrea, C. Richey.

Casa Grande (and Headquarters): Al Keuhl, Bill Butler, W. J. Lippincott, C. Richey, Paul Franke, Bill Leicht, Earl Jackson, Jesse Jennings, George Boundey, Jim Felton, Louis Caywood, Jack Haile, Bill Stevenson.

Chaco Canyon: Cal Miller.

Chiricahua: Hugh Miller, T. Strieby, C. Richey, J. H. Tovrea.

El Morro: Erik Reed.

Montezuma Castle: Chuck Richey, J. Tovrea.

Pipe Spring: Al Keuhl, Cliff Presnall.

Tonto: J. Tovrea, Chuck Richey.

Tumacacori: Supt. Pinkley, Hugh Miller, J. Tovrea, C. Richey, C. Macquire, David Jones, Parke Soule, Luis Gastellum, Natt Dodge, William Butler.

Walnut Canyon: David Jones.

White Sands: C. N. Gould, W. B. MacDougal, Lyle Bennett, Charles Richey, Cecil Doty, J. E. Kell, E. A. Pesonen, George Boundey.

150 New Equipment

Chiricahua: One Electrolux refrigerator

Walnut Canyon: One Electrolux refrigerator.

Tumacacori: Two oil-burning heaters.

Casa Grande: Nine oil-burning heaters, one Chevrolet Coach, three refrigerators, two washing machines and ironers (see p. 468).

170 Plans, Maps, and Surveys

Pipe Spring: Due to the approval of a new main highway which will pass near the monument, a re-location of the residential area has been made on the Master Plan (see p. 436-7).

Bandelier: Plans for the proposed telephone line have been completed (see p. 452).

180 Publicity

Montezuma Castle: A two-column head feature story regarding Montezuma Castle appeared in the "Commonwealth Reporter" of Fond du Lac, Wisconsin (see p. 462).

200 MAINTENANCE, IMPROVEMENTS, AND NEW CONSTRUCTION

210 Maintenance, unusual

Pipe Spring: Irrigation ditches have been lined with clay (see p. 435).

Walnut Canyon: The cistern underwent a thorough cleaning (see p. 438).

Bandelier: Much needed highway repairs have been made in the Detached Section (see p. 449).

El Morro: Penciling of inscriptions has been carried out as a protective measure against weather (see p. 446).

220 Improvements

Pipe Spring: Tools and other equipment have been moved out of the old fort room into the new equipment shed thereby making the old room available for public showing (see p. 435).

Chaco Canyon: A new cess pool is being dug (see p. 460).

230 New Construction

Pipe Spring: The garage and gas house was completed (see p. 434).

Montezuma Castle: One thermometer shelter (see p. 402).

Canyon de Chelly: The new equipment shed is progressing well (see p. 440).

231 CCC Construction

Bandelier: Eight pieces of furniture were completed (see p. 453). The concrete reservoir is almost complete. Walls on Unit #2, Hotel Development, were completed to four feet. Five rooms of the employees' dormitory were completed to lintel height. In the Community House, 110 rooms were completed by the Ruins Stabilization Crew (see p. 452).

Casa Grande: Sufficient adobe bricks have been made to erect one building (see p. 469).

Mobile Unit: Forty one cubic yards of masonry, 160 sq. yards of veneer replaced, and 15 sq. yards repointed (see p. 472-b).

300 ACTIVITIES OF OTHER AGENCIES IN THE MONUMENTS

CONDENSED REPORT (CONT.)

310 Contractors

Chaco Canyon: The Springstead Trading Company (on private land) sold out to A. B. Tanner (see p. 459).

320 Cooperating Agencies

Chaco Canyon: The Soil Conservation Service is continuing maintenance work and plans extensive projects (see p. 459). The School of American Research party has completed the main building and ten hogans and has begun work on the eleventh hogan (see p. 459).

350 Donations and Accessions

Montezuma Castle: Two flat-topped museum cases and one stuffed rattlesnake in lifelike pose (see p. 463).

400 FLORA, FAUNA, AND NATURAL PHENOMENA

410 Ranger, Naturalist and Guide Service

Aztec Ruins: Ranger-archeologist Day resigned Dec. 15 (see p. 428).

Casa Grande: Stremple Coyle and Marvin Hale were added to the guiding force. The work of the CCC guides has shown interesting possibilities (see pgs. 466 and 471-a).

Chiricahua: William Stone replaced Elija Alton as CCC guide (see p. 430).

420 Museum Service

El Morro: Although without building or equipment, the custodian has been showing slides and giving talks (see p. 445).

Tonto: The addition of nine pieces of pottery has increased the visitor interest in the museum (see p. 442).

Tumacacori: The completed museum building is ready for the installation of displays being made at Berkeley (see p. 443).

440 Insect Control

Aztec Ruins: Seasonal control measures were started (see p. 428).

460 Birds

Bandelier: An extensive discussion of the Merriam Turkey written by the custodian begins on page 450.

Gran Quivira: Many birds have been observed coming in for water. The horned owls are cutting down the overpopulation of rabbits. (See p. 456).

Headquarters: In bird-banding operations, 107 birds have been handled (see p. 471).

Montezuma Castle: The longest list of birds yet recorded was observed with 31 species identified and three undetermined species seen (see p. 463).

Navajo: In bird-banding activities, 117 individuals were handled. A list of resident species observed is given on page 429.

Walnut Canyon: Thirty-three birds were banded (see p. 439).

470 Animals

Capulin Mountain: Porcupines were numerous and have been damaging the trees. Deer caused inconvenience by rolling rocks onto the road (see p. 437).

CONDENSED REPORT (CONT.)

Gran quivira: Deer and other animals migrating into vicinity of monument as forced down by snow in mountains (see p. 456).

Montezuma Castle: Pack rat in nest building stocks up on nails (see p. 462) Lizard and snake observed in December (see p. 462-3).

480 Miscellaneous

Pipe Spring: The acting custodian reports that there is considerable interest still being shown in the new cactus discovered last spring (see p. 436).

Gran Quivira: A heavy pinyon crop has been a boon to wild life (see p. 456).

500 USE OF MONUMENT FACILITIES BY THE PUBLIC

510 Increase or Decrease of Travel

Walnut Canyon: Snow on December 20 marked the beginning of the winter season with a sharp falling off of travel (see p. 437).

Aztec Ruins, Tonto, and Montezuma Castle report decreases over the travel of December, 1936, and the custodians are puzzled as to the reason. (See, respectively, pages 427, 441, and 460).

600 PROTECTION

630 Accidents

Tumacacori: Several persons were injured, none seriously, in an automobile accident occurring on the highway at the monument gate, (see p. 444).

650 Signs

Walnut Canyon: A new set of directional signs is under construction (see p. 438).

White Sands: Nine home-made directional signs have been installed (see p. 426). The State Tourist Bureau has erected an attractive marker directing tourists to the monument entrance (see p. 424).

700 ARCHEOLOGY, HISTORY, AND PRE-HISTORY

Walnut Canyon: A group of Hopi Indians report several ruins, previously considered as rooms, to have been used as pits for roasting pinyon cones (see p. 438).

900 MISCELLANEOUS

Arches: Contrary to the established opinion, one visitor states the belief that winter is the best season for a visit to this area (see p. 433).

Aztec Ruins: Approach roads are reported as in the best condition in the history of the monument (see p. 427).

Chaco Canyon: Some pot hunting is reported as going on at the distant ruins (see pages 456-7-8).

Chiricahua: The U. S. Forest Service has been investigating proposed boundary extensions of the monument (see p. 430).

Montezuma Castle: A new son has arrived at the home of the custodian (see p. 465). A thunder storm occurred in the midst of a winter day (see p. 461). Prehistoric skulls have been photographed

CONDENSED REPORT (CONT.)

in preparation for a paper to be read at a dentists' convention.

Navajo: An unusual Navajo Indian ceremony was held near Kayenta (see p. 428).

Rainbow Bridge: A report of the placing of the plaque which announces the discovery of Rainbow Bridge is given on page 432.

Tonto: "Intelligent" cattle break pipe line to get water (see p. 442).

Walnut Canyon: The U. S. Forest Service is making an extensive study of plants of the Pinyon-juniper association in areas adjoining the monument (see p. 438).

White Sands: Highway 70 through the monument is very rough and corrugated (see p. 425). Two truckloads of "sand" have been furnished to the Hot Springs Hospital for Crippled Children for the sand tables (see p. 424).

MAIL COUNT

Incoming:		
Official	1,843	
Personal	<u>2,057</u>	
Total incoming		3,900
Outgoing:		
Official only	<u>2,852</u>	
Total outgoing		<u>2,852</u>
TOTAL POSTAL MAIL		6,752
Telegrams:		
Incoming	34	
Outgoing	<u>13</u>	
Total telegrams		<u>47</u>
GRAND TOTAL PIECES OF MAIL HANDLED		6,799

Cordially,

Frank Pinkley,
Superintendent.

YOU ARE NOW IN
- DANGER -

of being dropped from the mailing list of the Southwestern Monuments Monthly Report!

Of course we realize this may mean nothing in your young life and if such is the case, yours is the name we are gunning for: if you don't want or need the Monthly Report, we most certainly don't want you to have it because we have a waiting list of persons who do want or need it.

The Monthly Report is not propaganda: it is a report to the Chief of our Service in Washington, telling what we have done during the month which it covers. Since we have a far-flung organization, we have to put out about forty copies of the Report so our own men may keep up with the current events of our work. Thirty or forty libraries have thought there was some historical value about it and have asked to be put on the mailing list. A number of other people, interested in one way or another in the Southwest, have asked us to include their names. I think every address on our list has been put there either for an official reason or upon written or verbal request. Yet I may be wrong and we may be bothering someone with a report he doesn't want, and above all we do not want to do that.

What we propose to do is this: We will give you this copy and one more and then, if we don't get the card which we are printing at the bottom of this page from you, asking us to keep your name on the mailing list, off you go into the outer darkness. If this report isn't worth that much trouble to you, it isn't worth our while to make an extra copy and put it into the mail for you and we will stop. There **will be no other** chance and we will not urge you again; we are giving sixty days leeway to those who may be away from home or may otherwise not get their mail promptly, then we are going to start a new mailing list with these returned cards and throw the present list away; every name on the new list must have asked to be put there.

Cordially,

Frank Pinkley
Frank Pinkley,
Superintendent.

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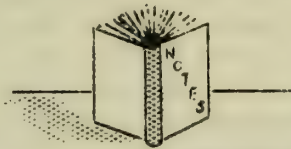
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Superintendent,
Southwestern Monuments,
National Park Service,
Coolidge, Arizona.

FIELD REPORTS

FROM THE MEN ON THE JOB



WHITE SANDS

By Tom Charles, custodian,
Alamogordo, New Mexico.

It surely seems nice to lean back in the swivel chair and say, "See the Ranger out at the Sands about that; he will look after you." I do not know whether I am most impressed with the convenience or the dignity of the situation. But it seems to me that it is going to work out to the advantage of the monument and every one connected with it to have Jim and Margaret there at the headquarters.

In looking over Jim's report, I find that he has stolen most of my usual "thunder", but I am glad to cut my report in proportion to the amount of increase by his. I am especially glad to shift this visitor count to him 'though it is evident now that he is going to "knock my ears down" a bit.

Jim's estimate for the month was 1,830 visitors. The registration is 664. On the percentage established by Barry Mohun, 14 per cent registration, the 664 registered would give us 4,742 visitors. So you can see there is some difference in calculation. Just to get the figures before you again, I want to call to mind that Barry counted 59 days, 8 hours a day, a total of 472 hours. He used a powerful field glass and counted from the hill east of the road that commanded a perfect view from Ridinger's station to the entrance into the sands. His records are meticulous and I have no doubt they are correct. On the 59 days counted, only 14 percent of the visitors registered.

Mohun's count is by far the most extensive one ever made at White Sands. There are many things yet which tend to support it. For instance, last Sunday there were 22 cars at the turn-around between 11 a. m. and about 4:15 p. m., practically 110 people; yet the book shows that only 21 registered all day. At least half of those who registered were personally requested to put their names on the book.

So, as a sort of farewell in this counting business, permit me to suggest that until the traveling public is routed in front of the new buildings and the visitors are actually tallied in, with at least an 18-hour a day count, there is going to be more or less guesswork with the influence of the inspiration, indigestion, and the various things that contribute.

WHITE SANDS (CONT.)

Our public relations department seems to have been a little slow this month. We had a letter from Fred Healey, state administrator for the W. P. A., in which he says, "I want to compliment you and the men working on the White Sands Project for the splendid work they have done. The adobes in the buildings are some of the best I have ever seen; the architectural designs and the entire layout is a splendid exhibition of what can be done with a little thought and effort."

Governor Tingley got two large truck-loads of white sand for the sand tables at the Hospital for Crippled Children at Hot Springs this month and the editors of DESERT, the new magazine published at El Centro, California, asked for pictures to illustrate a forthcoming article on White Sands in their popular magazine. The Magnolia Oil Company has definitely selected a picture of the Sands to use as one of their 12 National Attractions for the 1939 calendar, and the State Tourist Bureau and Highway Department have erected the White Sands marker at the fork of the roads, Federal 54 and Federal 70. It is a beautiful marker. The White Sands is one of about 18 or 19 state attractions selected by the Tourist Bureau. Frances Green, stenosecretary for Johnnie Stevens at White Sands, was elected queen of Alamogordo for the coming El Paso Sun Carnival.

So, despite real winter weather for our section and the rain and the snow at the other ends of our roads, we have nothing to complain of. We have an over-abundance of Christmas cheer and good will for every one and especially for the home office and the co-workers in the Southwestern Monuments.

WHITE SANDS RANGER PROBLEMS

By James B. Felton, ranger,
Alamogordo, New Mexico.

TRAVEL

As you may guess, my first ten days on the job were rather hectic. Visitors didn't see very much of the new ranger, nor he of the visitors. After the loose ends were gathered, study began on the problem of contacting and counting visitors at the Sands. Please do not think, Boss, that I am satisfied with my figures or methods. They are not very accurate. Six hundred sixty four visitors registered. Seventy percent of these came over week ends. On Sunday, November 28, my first full-day count was made. A total of 202 cars travelled Highway 70. Sixty-seven of these cars drove into the monument bringing 268 people. In addition, nine cars stopped along the road where it skirts the Sands. There were 27 visitors in this group, making a total of 295 persons for the day. My records for the remainder of the month show 1,535 visitors in 383 automobiles: a grand total of 1,830 visitors.

This represents a considerable decrease from the estimated number. The reason, I am quite certain, lies in the 14 percent registration

WHITE SANDS (CONT.)

estimate. For the time being, I find, by checking the register with the cars coming into the monument, that at least 50 percent of our out-of-state visitors are leaving their names on the registration book. Weather conditions have caused some drop in the number of dudes.

After the heavy snow in the mountains, we had no visitors for a day. Only two cars appeared on the following day. In giving a travel figure for this period, we estimated the number for six days when there was no count. Mr. Charles' record for Sunday the 23rd and Thanksgiving added to mine, I feel, come very close to the correct totals.

GENERAL

We arrived in Alamogordo November 18 and fell into the hands of Mr. and Mrs. Charles. It certainly was fine to have a place just like home opened to us. We enjoyed four days of gracious hospitality with them before we were able to make camp in our new house. Even so, it seemed necessary that I go into the plumbing and electrical business if we were to use the kitchen and bath. With the conduit in place, stove operating, and with running water, we were somewhat settled by the 28th.

While I am writing this, the W. P. A. boys are giving our home some of the finishing touches--floor polishing and waxing being the order of the day.

When the cold north wind raises the sand and dust in the air, I find this New Mexico winter a true bone-cooler for a native Arizona desert dweller. The sunny Santa Cruz valley with its balmy air is not forgotten; however, the White Sands have a beauty all their own and, in the bright sunlight of today, they are a match for the snow-topped mountains to the east.

ROADS AND WEATHER

Most of the month ideal weather prevailed; however, in the past ten days rain, snow in the mountain districts, and cold north winds brought winter down upon us.

The State of New Mexico maintains highway 70 through the monument. In spite of constant attention, this road is rough and corrugated. Little or no surface materials remain, and no amount of grading seems to improve this unpaved 29 mile section. As the present location of 70 is a temporary route, we expect visitors will have to grin and bear with us until the new highway is constructed.

Mr. Shepperd worked full time on our five miles of clay surface road. Several sandy turns and a few narrow places caused by drifting sand were given needed attention. Clay surfacing was added to the

WHITE SANDS (CONT.)

soft spots and on the loose turns. Two old garbage dumps have been obliterated in conjunction with highway maintenance.

IMPROVEMENTS

Nine (Beaubien type) signs were made to be placed along the monument highway. Visitors are now informed that the paved road that springs up out of the wastes is a "Loop drive to the White Sands". With one of these informational markers on each side of the junction of 70 and the "black top", our travelers now either drive into the monument or plunge on their way to Alamogordo or Las Cruces. These cross-roads caused a great deal of confusion before the signs were erected. Our other seven signs replace the unsightly old markers on the clay surfaced road.

NATIONAL PARK SERVICE VISITORS

Dr. Charles N. Gould and Dr. W. B. MacDougal were here for a day to look over White Sands geological and wildlife problems.

Lyle Bennett was practically a resident architect during most of the month.

Charles A. Richey and Cecil Doty were other architects visiting the monument.

Regional Officers J. E. Kell and E. A. Pesonen were here on business with the RD.

Mr. George L. Boundey (our nearest Park Service "compadre") with Mrs. Boundey and children visited the Sands.

*****SWM*****

We want to say right here, Chief, that we are not going to hold this first month's count against Tom and his estimator. He was doing the very best he could and that Barry Mohun count, upon which his estimates were based, was made as carefully as was possible. That count was probably made at the height of the visitor season, while Jim's count last month might have been in the off season. At any rate, we will find out something about it in the next few months. One thing seems certain to us at this distance and that is Jim's count is too low as rendered, but we will let it go in without correction. What we feel like doing is striking an average between the two methods of figuring; like that Franchman who was making a 50 percent hash by mixing one horse with one rabbit.

We had a right good treasure hunting story break at White Sands lately and for a time we had strong hopes for some publicity, but the

WHITE SANDS (CONT.)

hunter proved to be much more loco than the average so we couldn't build anything that would hold together. We are going to play up the next case of mild treasure hunting that comes our way at Tumacacori, Gran quivira, or White Sands; we have let several of them get by in the past without much comment.

Jim and Margaret Felton were in at Headquarters the other day and to hear them talk, you would think they had the finest monument in the whole Southwest. Jim wasn't any too pleased with the Park Service Bulletin description of the wall around his parking area wherein it was mentioned as a 'dobe corral. It is really just another of those walls the architects like so well; they generally start our administration group plans by building a wall and then putting some buildings behind it.--F. P.

*****SWM*****

AZTEC RUINS

By T. C. Miller, custodian,
Aztec, New Mexico.

GENERAL

Approach roads to this monument have been in better shape during the month of December than ever before in history. Highway U. S. 550 from Aztec to Farmington has been completed and the gravel is setting up nicely. We have had enough moisture to help pack the road. The new graveled road from U. S. 550 to the monument headquarters has packed almost as hard as pavement. However, with all the good roads and excellent weather, we show a small decrease in travel comparing it with the corresponding period of last year. This I am unable to explain.

TRAVEL STATISTICS

Total Travel- - - - -	-503	Foreign Countries- - - - -	1
Cars- - - - -	-170	Number of field trips- - - - -	97
Number of States- - - - -	21	Number of museum talks - - - - -	-102
Total guide time in field- - - - -	-2675	Total guide time in museum - - - - -	2090
minutes.		minutes.	
Total conducted tours - - - - -	-4765	minutes.	

WEATHER STATISTICS

Max. temp.- - - - (Nov. 24)	59°	Min. Temp.- - - - (Dec. 21)	8°
Total precip. - - - - -	-.33	Greatest precip. in 24 hrs..	15 in.
Clear days- - - - -	16	Cloudy days - - - - -	7
Partly cloudy days- - - - -	7		

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AZTEC RUINS (CONT.)

NATIONAL PARK SERVICE OFFICERS

Mr. and Mrs. Homer F. Hastings, seasonal ranger, Chaco Canyon, and Custodian Faris, Canyon de Chelly, were here November 25. W. Ward Yeager from the regional office in Santa Fe was here to initiate seasonal insect control December 4.

PERSONNEL

H. Summerfield Day, ranger archeologist, resigned effective December 15. Mr. and Mrs. Day are now spending their accumulated annual leave in Chicago.

MONUMENT INSPECTIONS

Two trips were made to Chaco Canyon under dates of December 7 and 19. The inspection trip to Hovenweep and Yucca House had to be postponed this month due to the vacancy in personnel mentioned above in this report.

*****SWM*****

It is too bad about the resignation of Mr. Day. It takes us so long to get a man and break him in that we hate to see him quit. Likewise on the man's side: he is at considerable expense in both time and money to try out in the position and it is too bad to lose it all by drawing out. We try to put our needs in the coldest terms we can in taking on new men but despite that men come to us expecting to do research work in archaeology whereas what we are really seeking is an archaeological salesman, if there were such a profession.--F. P.

*****SWM*****

NAVAJO

By Milton Wetherill, park ranger,
Kayenta, Arizona.

December has been quiet with the usual work around the monument, such as working the trail and patching up the roads. I have worked the road in several places in order to make the trip without tearing up equipment.

December weather for northern Arizona has been mild with about half the days partly cloudy or cloudy. There was one light snow of about two inches which followed six hours of light rain.

A Navajo ceremony, "Ho-zha-nie Ha-ta-lie", was held near Kayenta starting December 7 and ending the 15th. This ceremony is not held very often, as very few Navajos know it. Therefore it has nearly died out. It is a nine day ceremony with sandpaintings the last four days. The sandpaintings are made after sunrise and destroyed before sunset.

NAVAJO (CONT.)

BIRDS AT BE-TA-TA-KIN

Birds at Be-ta-ta-kin, Navajo National Monument, Navajo County, Arizona, are winter residents and year-around residents.

Rocky Mountain Nuthatch	Shufeldt Junco
Rocky Mountain Chickadee	Montana Junco
Gray Titmouse	Pink-sided Junco
Long-crested Jay	Gray-headed Junco
Woodhouse Jay	Red-backed Junco

Birds Banded:

Junco oreganus montanus	- - - - -	-14
Junco oreganus shufeldti	- - - - -	-19
Junco mearnsi	- - - - -	6
Junco caniceps caniceps	- - - - -	3
Junco caniceps dorsalis	- - - - -	1
Poocetes gamineus confines	- - - - -	2
Sitta pygmaea melanotis	- - - - -	2
Juncos, repeats	- - - - -	-70

*****SWM*****

CHIRICAHUA

By Frank Fish, custodian,
Douglas, Arizona.

WEATHER

Winter was ushered in on December 13 with rain in the lower elevations and two or three inches of snow in areas above the six thousand foot mark. December 20, starting around 2:00 p. m. and continuing well into the night, a storm accompanied by high winds left the monument and the country to the east blanketed with snow at variable depths of a few inches to drifts of two and three feet. The monument road was blocked for four miles of the six, but was opened to travel on the 24th. Sixteen inches of snow was reported at Portal and traffic around Lordsburg, New Mexico, was delayed.

ROADS

Construction and improvements have been continued on the Bisbee-El Freida and the monument roads. Improvements have reached a lull on the road to Willcox. Maintenance of all roads - entrance and monument - has been excellent during the month.

The road over Onion Saddle to Rodeo, New Mexico, at the present writing is blocked by snow and under normal conditions will be closed until around April.

CHIRICAHUA (CONT.)

Surfacing should start soon on the Steins Pass Highway as I understand the bids have been let on the first section. This route runs from Lordsburg Junction (18 miles west of Lordsburg) through Willcox and Benson to Tucson. Considering that it will be a shorter route from the east to west, it appears only natural that much of the future travel will go that way - passing north of the monument instead of east.

This route will have a greater attraction to many tourists that are accustomed to level country, as there are no grades or deep canyons. I find that a large percentage of eastern visitors are frightened by even our short Bonita Canyon Highway.

VISITORS

	<u>Cars</u>	<u>Number</u>	<u>Out of State</u>	<u>Number of States</u>	<u>Foreign</u>
1937- - - -	67	231	89	21-D.C. and C.Z.	Canada
1936- - - -	59	273*	73	22	None

*61 CCC from 64-A, Nogales, Arizona.

VISITOR STATISTICS

	<u>Trips</u>	<u>Att'd.</u>	<u>Time</u>	<u>Total Stay</u>
1937- - - -	19	83	1147 Min.	7386 Min.
1936- - - -	7	13	995 Min.	Not Available.

NATIONAL PARK SERVICE OFFICIALS

Charles A. Richey and J. H. Tovrea were here the 10th. dealing with problems concerning CCC work.

Hugh M. Miller and Ted Strieby arrived the 17th, and left on the 18th. for Bandelier National Monument.

OTHER GOVERNMENT AGENCIES

Fred Winn, Gilbert Sykes, and Mr. Miller of the U.S.F.S. Albuquerque office investigated the proposed addition to the monument on the 7th. and left the idea that they felt that the addition was justified.

ADDITIONS: (EQUIPMENT)

An Electrolux refrigerator was received during the month for the new residence under construction.

The Annual Report of the Secretary of the Interior has been received.

GENERAL

Elijah Alton was replaced by William Stone as CCC guide during the

month.

During the slack periods, a little Practical Forestry was carried out; i. e., operating the wood saw. This will always aid one in understanding the hardness of different species of trees. However, Ed Riggs convinced me by a bet we made that I do not know all about wood.

Wishing all the "Big Family" a Merry Christmas and a Happy prosperous New 1938.

*****SWM*****

We are interested in the fact that the State is finally starting that straight road across from Lordsburg to Tucson. This takes quite a lot of mileage out of the present distance between these two points and settles a road fight which has been running for many years. From our standpoint, it will throw traffic to the north of Chiricahuas instead of to the south as at present; it will take traffic away from Tombstone, where we are considering the possibility of a future monument, and will throw it up closer to old Fort Bowie, where we are considering the possibility of another monument. If the local people are wise, they will come in with us on these possible monuments and thus build up an interior circle of traffic which will draw visitors from both the old and new highways and benefit the country as a whole by holding people over one more day to the great benefit of the visitor himself and the incidental benefit of the community in which he stops.

We want to take this opportunity to thank Elijah Alton on behalf of the Service for his many months of work, to welcome William Stone to our personnel roll, and hope he will get as much fun out of his work as the rest of us do.--F. P.

*****SWM*****

RAINBOW BRIDGE

By Frank Pinkley,
Coolidge, Arizona.

We lift the following from the Navajo Service News, a corking good little house organ put out at Window Rock, Arizona, for the benefit of the Soil Conservation Service and the Indian Service.

"Most exuberant person at the table was the cook, an old timer from Kayenta who scoffed at tales of the day's discovery and told of the time an eastern millionaire came to Kayenta desiring to discover something.

"Old John Wetherill saddled up the horses and rode out into the wilderness with the millionaire until they neared the place that John had decided to let his companion 'discover'. Then John dismounted and the visitor went forward and made the discovery which was shortly im-

RAINBOW BRIDGE (CONT.)

mortalized on a bronze plaque laboriously toted to the site some weeks later by pack mule. Things didn't go off quite as smoothly on the second trip, which nearly proved disastrously embarrassing, as John had seemingly forgotten the way and the 'discoverer', who had brought friends along to witness his triumph, was in great travail until he and his bronze burro-load of self commemoration were tactfully steered into the anticipated destination a second time."

After getting a good laugh at the story as told we would like to set the record straight by explaining what really happened. When Hosteen John Wetherill acted as outfitter, guide, counsellor, and friend to the expedition which discovered the Rainbow Bridge, he took along a young Indian by the name of Nasja Begay who knew where the Bridge was and had offered to guide his white friend, Hosteen John, to it. When they got pretty well down what we now call Bridge Canyon, the Indian told John he thought the Bridge would be visible around the next bend in the canyon. John then dropped back and told Dr. Byron Cummings to take the lead and Dr. Cummings thus became the first white man so far as we know to see the Rainbow Bridge.

Many years later Hosteen John took a visitor in to the Bridge by way of the north side of Navajo Mountain, a most interesting trail which is not used as often as it should be, and incidentally told him the whole story of the discovery. This visitor thought the part of the Indian lad taking his white friend and his friend's friends, to the bridge had not had its fair share of publicity and proposed, at his own expense, to bring in and set up a plaque commemorating the Indian's part in the discovery. This matter being taken up through regular channels and permission to do so being obtained, the gentleman had Jo Mora design the plaque, had it cast in bronze, shipped to Flagstaff, and hauled thence to Ben Wetherill's place on the east side of Navajo Mountain. He had invited several of his friends, a representative of the Park Service, and a representative of the press to go in with the party.

Technically, the job of taking the plaque in was a hard one because it was so heavy and large it could not be packed on the side of a pack mule and could not be balanced on the top of a pack. John solved the problem by making an old fashioned travois such as was used on the plains and on this well-known mule, Phoebe, dragged the plaque over some of the roughest country in the southwestern United States to the place near the Bridge where it is now mounted in the cliff. Workmen, taken along for the purpose, mounted the plaque and appropriate ceremonies were then held in which the United States through the representative of the National Park Service, accepted the plaque from the donor, after which the party came out by way of the south side of the Mountain past the Rainbow Lodge.

I suppose this gentleman expended something like a thousand dollars of his own money in commemorating the act of the Indian boy; his

RAINBOW BRIDGE (CONT.)

own name not appearing in the matter except in the correspondence and local press items the few days the expedition was in the field; if he wanted the spotlight for himself, it was a terribly expensive way to get it; if he wanted to perpetuate the act of, until then, an unknown Indian boy, he took precisely the right steps for doing so at a considerable cost to himself. At any rate, it will be seen that the garbled story of the cook which is quoted above shoots far and wide of the truth.

I happen to be the Park Service representative who went along.

*****SWM*****

ARCHES

By Harry Reed, custodian,
Moab, Utah.

VISITORS

About 50 persons (estimated) have visited the Arches this month. Parties were made up of residents from Price and Greenriver, Utah, and Grand Junction, Colorado. There have been no special visitors nor park officials.

WEATHER AND ROADS

For the first 18 days of December, we have had beautiful sunshine. The weather has been ideal for hiking. Rains last week end broke the mild weather. Snow in the high country has brought the temperature down well below the freezing point. So far, no snow has fallen in the monument and the roads have been in very good shape. One party who visited the Arches last summer was a December visitor. He insists that the winter months are the best time to visit the monument. While I cannot agree with him one hundred percent, I do believe the monument could be kept open all year.

*****SWM*****

PIPE SPRING

By Leonard Heaton, acting custodian, Moccasin, Arizona.

My report for the month of December will be mostly about the work connected with the different jobs done by the CCC boy and myself on the CCC and monument projects. There was very little time spent with the visitors about the fort.

VISITOR REPORT

Among the visitors to the monument this month were Al. Kuehl on November 24 on inspection of garage and gas house, and Cliff. Presnall, naturalist from Zion park, with his family, on the 29th. He

PIPE SPRING (CONT.)

was very taken up with the idea that I keep on with the bird banding.

The balance of the visitors or contacts that I made were with local people and CCC boys that had a few minutes to kill. There were a lot of unguided visitors, some of which I wish that I might have guided to keep them from molesting bird traps and monument property. No serious damage was done but their actions were annoying.

My record shows I contacted 30 as against 14 for November and 114 were unguided as against 40 for November. There were no campers nor picnickers this month.

BIRD BANDING NOTES

I have carried on the banding of the birds throughout the month, having fairly good success catching them. I have not done so well the last week on account of the storms that have driven the birds on into the south country. My catch for the month of December, as compared with that of November, is as follows:

	<u>New</u>		<u>Returns</u>		<u>Repeats</u>		<u>Totals</u>		
	Dec.	Nov.	Dec.	Nov.	Dec.	Nov.	New	Ret.	Rep.
Gambel Sp. - - - -	57	77	1	2	87	70	134	3	157
Song Sp. - - - -	2	6			16	13	8		29
House Finch - - -	1						1		
Spurred towhee---	1						1		
Totals (333, all told) - - - - -							144	3	186

WEATHER

The weather has been rather cool throughout the month with a few stormy days. On the tenth we received about 20 hours of fine steady rain, just a soaker without making water run; and on the 19th a blizzard struck for six hours, covering the ground here and putting some ten inches of snow in the mountains. The east pond has had ice on it the last four days and there has been very little thawing weather.

Records show that there have been 11 cloudy and stormy days, five partly cloudy, and 14 clear days this month.

CCC AND MONUMENT PROJECTS

Work was continued on the garage this month putting down the rock floor (rock were hauled from Bullrush Wash, eight miles south of the monument). Building paper was tacked on the inside of the garage in the walls, gravel was hauled onto the driveway going into the garage, and all the tools and the tool cabinet, as well as the other equipment, were moved into the garage on the sixteenth.

There is plenty of workroom left with the truck, tool cabinet,
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PIPE SPRING (CONT.)

and work bench in place, and also room to store things such as lumber and what-nots overhead.

Gas House. The CCC blacksmith made me some hinges for the gas house door which were put on with the lock the fifteenth. On the 16th, the gas, oil, and grease with cans were stored in the house. There is plenty of room for such materials for the needs of the monument.

East Cabin. With the moving of the tools and gas to the garage and gas house, we cleaned up the trash and gave the south room a good cleaning and opened it to the public as part of the fort. It had been used as a tool house and work room for about four years and very few got to see inside of it.

Camp Grounds. All the camp tables have been planed and painted with linseed oil, the last two being completed last week.

Also we have split and stacked the wood, that accumulated from the making of the tables, into four ricks near the fire places (or where the fire places will be built) and a general cleanup of the whole camp area has been made.

Three truck loads of clay were hauled in and used to line irrigation ditches for some 40 feet. Also several loads of gravel and shale were put on the road in the low places.

Roads. The road from the west pond to the west monument entrance, that I reported needed new gravel and for which I have tried to get a truck from the CCC to do the job, has been gravelled about half way.

For some reason or other that I do not know, the Army had some extra duty for the entire company December 18 and sent out three trucks with men. All day long they were busy hauling gravel till the road was gravelled from the west pond to the camp entrance. We now have about 120 yards to gravel onto the entrance.

Planting. We set out five silver-leaf cottonwood trees on the pond banks, to replace the trees that have died and been taken out. I want to get some more set out as soon as I get two mps out of the bank. I have been wondering just how I will set them out without tearing down the rock wall too much.

I have cleaned some more grass seed which I want to plant along with some more brush seed this week or next.

Fort. The first step in front of the fort was dug out when we were planning to put a walk to the east cabin but never did, and it left a rather high step. So this month we got two big rocks and put them in for the step. The more I look at it, the more I think we

PIPE SPRING (CONT.)

should reconstruct the remainder of the step with the larger rock. I have been waiting for Al. to come in and give his opinion and suggestions.

NATURE NOTES

Our storms of warm rain have brought out some plants on the sunny side of the buildings and rocks. The other day I noticed some dandelions in bloom at the lower side of the meadow.

Mr. P. H. Peebles of the U. S. Bureau of Plant Industry wrote asking for all the information that I could give him on the "Utahia silerias" cactus that I reported last spring. There have been several requests for seeds or plants of this cactus, but as yet I have not filled these requests. This last season I only gathered some 20 or 25 seeds from the cactus. It seemed that the mice or rats always beat me to the seeds when they were ripe.

GENERAL OUTLOOK

I have things in fairly good condition for the winter and have plans and work outlined that will keep me busy most of the winter, if the storms do not get too bad.

With the new set-up with the CCC, we ought to be able to complete some of the CCC projects by April of next year.

IN CLOSING:

As another year approaches, I have stopped to reflect on the past year's work, noting the failures and successes that I have had, and making new resolutions with greater determination to fill my obligations to the people that I am called upon to serve, resolving that 1938 will be a better year than the one just passed.

So, bringing the 1937 monthly reports to a close, the Acting Custodian and Family wishes all who read these reports a Merry Christmas and a Happy and Prosperous New Year, and hoping that some day we may take your hand and say, "Tu Caubin Noonie", Piute for "We are always friends".

*****SWM*****

It looks like Leonard had a pretty busy month and a number of things to report despite the lack of visitors.

During the month Messrs. Keuhl and Richey were in at Headquarters and, among other plans, we went over the master plan for Pipe Spring. On our present information as to the location of the proposed highway

PIPE SPRING (CONT.)

outside and some distance to the south of the monument, we relocated our prospective residential area a little further south and west and this will be shown in the new master plans which will be coming out soon. I was relieved to find that the new highway will not come through or very near the monument.--F. P.

*****SWM*****

CAPULIN MOUNTAIN

By Homer J. Farr, custodian,
Capulin, New Mexico.

Visitors have been very few this month, I estimate not over three hundred. I noted a sharp decline from November, beginning about the first of this month. We had about twelve hundred in November and three hundred this month. I believe we had more than one hundred last Thanksgiving Day alone.

Our weather has been fairly good all this month but has been a little colder than common. We have had some four or five small snows this month and they have done considerable good. We are learning that our winter moisture does us more good than we had before thought, for the reason that evaporation does not get hold of snows in the winter.

Porcupines are now beginning to take hold of the trees as the winter gets colder. I have killed several and am looking for more.

The roads on the monument are in perfect condition and our only trouble right now is that the deer are rolling many rocks in the road from above. I believe we have a new influx of deer this month but I have not been definitely able to count them, altho I think we now have about fifteen.

I wish the Boss and all the rest a fine Christmas season and more work and pleasure for 1938.

*****SWM*****

WALNUT CANYON

By Paul Beaubien, custodian,
Flagstaff, Arizona.

There were 270 visitors at Walnut Canyon this month. A little snow on December 2 slowed traffic a bit, and more snow December 20 and 23 just about finished the visitor business for the winter. The county ran a snow plow over the entrance roads, but wood haulers are about the only ones to use them.

David Jones stopped by on his way south. Coming home that night, we ran into a deer and damaged the new car about \$20 worth.

The only other Park Service visitor was Milton Wetherill who came

WALNUT CANYON (CONT.)

by to help unload the newly acquired Electrolux (weight 510 pounds). Said ice box is being used to hold winter supplies. If it is insulated against thawing in summer, maybe it will keep things from freezing this winter.

Erik Reed was at the Museum of Northern Arizona the past week, working on the pot sherds from Room 7 at Wupatki.

I should mention that the Park Service was honored by Dr. Harold S. Colton when he invited David and me to Thanksgiving dinner.

I had one visitor repeat several times this month - Dr. Elbert L. Little, Forest Ecologist of the National Forest Service. From him I learned that the Department of Agriculture has a project under way to make a thorough study of the plants of the Pinyon-Juniper zone, hoping the information gained will make possible a greater utilization of those plants. Dr. Little is principally concerned with the Pinyon Pine. A group of these trees, just north of our boundary, have been tagged and will serve as his outdoor laboratory. I spent some time with him and increased my knowledge of Pinyons several hundred percent.

While speaking of Pinyons: Five Hopis recently visited Walnut Canyon. When discussing the numerous small ruins back from the canyon rim, I was informed that many which I thought were dwelling sites, were in reality the remains of stone-sided pits for roasting pinyon cones. According to my informers, the cones were gathered when slightly green and baked overnight in said pits. One, Edmund Nequatewa, called it steam baking because of the moisture present. Next morning the cones would be transferred from the pit to a blanket where they would be beaten with sticks. Supposedly, the shell pops open, the kernel falls out, and the shell remains with the cone.

I checked this information with Jimmy Kewanwyteewa, Assistant at the Museum of Northern Arizona, and he said he could remember when this practice was common.

Perhaps this method of shelling the seeds has been published many times, but it was news to me. (Botanically speaking, I believe that pinyon seeds, and not pinyon nuts, is correct.)

I have worked at making a new set of direction signs for Walnut Canyon, but right now I'm in the midst of another project. I am trying to give the cistern its second cleansing since 1930. Anticipating this cleansing before I went to Saguaro last fall, I removed the troughs which carry the water from the eaves to the filter. But when I returned in the spring, I found the cistern about 1/3 full of water. After using from it all summer there were still more than 42 tons of water to be removed.

WALNUT CANYON (CONT.)

That is a lot of water for arid Arizona, and is still more for a poor ranger to drag from a deep hole. If the cistern was just ten feet shallower, I might remain a Christian. When I reach bottom, there may be a few rodent skeletons for the study collection. Would you call that looking on the dark side or the bright side?

I banded birds only one day, November 30. Thirty three birds were handled:

	New	Repeats	Returns	Total
Chestnut-backed Bluebird	7		1	8
Crossbill	1	1		2
Red-backed Junco	2			2
Pygmy Nuthatch	9	6	1	16
Rocky Mountain Nuthatch	1			1
Western Robin	2			2
Lewis Woodpecker	1			1
Mearns Woodpecker		1		1
Totals	<u>23</u>	<u>8</u>	<u>2</u>	<u>33</u>

I made four trips to Wupatki. On the last trip, December 23, I was accompanied by Jimmy Kewanwyte-wa who distributed Dr. Colton's Christmas gifts to the Navajos of Wupatki Basin. Snow drifts stopped us three times between Highway 89 and Sunset Crater. By shoveling a few more drifts, we could have reached the register, but would have been unable to continue to Wupatki via Heiser Spring. This is one time I can report that there were no visitors wandering around Sunset and wondering what it was all about.

There was little snow at Citadel, and only 49 names on the register. We saw one party of visitors leave, and another car arrived before we left. There is a "remark" column on the register at Citadel and almost every party had left an uncomplimentary expression about Park Service roads, lack of explanation, etc.

Most visitors to Citadel stop their car in the valley north of the ruin, and then walk some distance to arrive at the top of the mesa. Because of this, they frequently do not visit Nalaki-hu Ruin, east of Citadel, where the register is kept.

At Wupatki there were 29 names on the register below where David had written, "17 visitors between November 21 and 23". He alone knows whether these 17 should be counted this month.

The caretaker, Clyde Peshlakai, had finished roofing the old C. W. A. cook shack; had whitewashed the living quarters in the main ruin; and has done some work on the roads. He was straightening up the inside of the cook shack or store room when I arrived.

His father (see Sally Brewer's article "The Long Walk to Bosque

WALNUT CANYON (CONT.)

Redondo" as told by Peshlakai Etsedi (Museum Notes, Museum of Northern Arizona, Volume 9, No. 11) is very ill.

Clyde is living in the large hogan which Jimmy Brewer built to partly house his proposed Annual Navajo Arts and Crafts Exhibition.

*****SWM*****

We are very glad to get the interesting observations about the baking of pinyon cones. It makes us wonder if a little research work isn't indicated, possibly some of those pit remains which have been passing for early sites, as Paul suggests, will turn out to be this type of roasting pit.

We are sorry to hear of the illness of Peshlakai Etsedi and hope the sing which was held for him brought him back to his usual health. He is a very fine old man and has many friends throughout the country.--F. F.

*****SWM*****

CANYON DE CHELLY

By Johnwill Faris, custodian,
Chin Lee, Arizona.

The first part of the month found me trying to catch up on the loose ends after being away on annual leave. An agreeable surprise was finding the equipment shed so well along. Gipe and his men did some splendid work against many odds and I am certainly proud of the boys and the work they did.

Two official trips were made so far this month. The first to Holbrook and Gallup, the second to Gallup only. Both trips had to do with materials and supplies both for the special construction and regular monument activities.

Several minor jobs were accomplished, mostly in connection with protection against the colder weather we can expect now at any time. Pipe lines protected, pipes provided with stops, lowering of several points. Cementing our gasoline storage with a temporary cover. Minor drainage features and many other of the usual duties connected with the season.

Only three actual visitors for the month. This I think was due largely to the fact that several days during the month were somewhat threatening and last year's blockade can readily be recalled. As you can see by the SWM 16, one of these, a geologist of the Department of Agriculture, was in for a couple of days. He was very interested and gave many interesting points. It is his desire to get back and spend a longer time with us. It was impossible to get into the canyons and he would like very much to do that again. He has been up but only on

SOUTHWESTERN MONUMENTS

CANYON DE CHELLY (CONT.)

hurried trips and wished to spend some time in each canyon. While not counted as a visitor, Budlong and a friend was in the early part of the month. He took out some of the things he had stored here. It seemed quite natural to have Bud in the setting and the next time I do not want him to pick a day I am in Gallup to come out, and too, the next time he is to bring Betty. This is his second or third trip and not once did he bring Betty. He likely is scared that he would never get her back to El Morro after getting a drink of good water and putting foot inside a real house.

During my absence on vacation, de Chelly was visited by Engineers Diehl and Tovrea, and Architect Richey. I regret very much missing these gentlemen and invite them back whenever it is possible for them to get out this way.

December first, Boss, marked my first year as Custodian at de Chelly, and I want to thank you and any others concerned for the assignment. It has been a year filled with interest and pleasure. Other Government agencies, the McSparrons, one after another of our visitors, and the Indians themselves have all contributed and I am duly grateful. My closing wish is that each of the other monuments and headquarters can face the New Year as eager and with as much promise as de Chelly holds for me. To each and every one of the boys, de Chelly wishes the season's best and trusts that 1938 will be a banner year. To all, our sincere wish for success.

*****SWM*****

TONTO

By Tom Onstott, ranger in charge,
Roosevelt, Arizona.

Thus passes a warm but rather untraveled December. The weather has been ideal for travel, but it seems that people haven't been going places as much as last year.

The new SWM 16 caused me a bit of worry for a time. Everything went along fine until one busy day when, within three hours, there were three breakoffs and two joiners out of three parties. This would not have been anything to worry about only all three parties were here at the same time. This in conjunction with keeping total time of visitors on the monument, tossed me for about 15 yards loss. That night, I went into a huddle and next day, after wearing my finger nails to the quick on my thick skull, I came out with a system that should keep me at the line of scrimmage, at least.

As official guiding started on the first, the exact number of visitors cannot be given. A close estimate, however, would be 360; 247 of whom registered from 23 states, Alaska, Hawaii, and Washington, D. C. Twenty percent of the registered guests were from Arizona.

TONTO (CONT.)

SWM 16 goes as follows:

Number of guided field trips-	- - - - -	42
Persons on guided field trips	- - - - -	-125
Average size of party	- - - - -	2.8 persons.
Total time on field trips	- - - - -	2105 minutes.
Average time on field trips	- - - - -	48.9 minutes.
No. guided museum parties	- - - - -	38
No. of persons in museum parties-	- - - - -	-129
Average size of party	- - - - -	3.4
Total time in museum (guided)	- - - - -	-522 minutes.
Average time of museum party-	- - - - -	13.7 minutes.
Total guided time	- - - - -	2627 minutes.
Total stay of visitors-	- - - - -	3965 minutes.
Average stay of party	- - - - -	85.3 minutes.

On November 27 Mr. Peters of the Fresno Ranch School and 30 of his students camped over night.

J. H. Tovrea and Chuck Richey paid a short visit on December 14. Come again, gentlemen, when the trail is guttered. Chuck kindly left plans for the work.

The road was bladed on November 28. Three trips were made with the grader that helped the road a lot. If I can get the remaining rocks off the road and keep them off, we'll have something.

The cattle up here have been getting their drinking water by breaking the pipe line. It so happened that there was a union over a low place which was easy to break loose. By changing around, I think that the union is now in a safe place.

Nine pieces of pottery, which were very kindly donated to the monument by Mr. Gladwin of Gila Pueblo in Globe, have been cataloged and are now quite an item for the visitors' attention.

Weather: days clear, 17; days partly cloudy, 2; days cloudy, 11; precipitation on 6 days, total 1.29 inches. Maximum temperature, 70; minimum temperature 38. The weather records are from the Salt River Valley Water Users Association at Roosevelt.

Next month I hope to have better luck and consequent better figures on SWM 16.

*****SWM*****

We are sorry Tom had trouble with SWM 16. It is a little more intricate than the old form but is yielding some interesting facts. On busy days it will break down under the rush; it does here at Casa .

Grande where they have about all the complications that can happen in the field and one or two more, but I don't think it will seriously hurt the results of, say, five thousand trips to drop a few busy days out of the calculations.

Tom was at headquarters for a few hours the other day and told me an interesting thing: he can average a longer time in the museum after his parties have been through the ruins than before they have visited the ruins. We wonder if this is because they can see the ruins from the parking area and museum and are impatient and anxious to make the trip and for this reason cut down the time in the museum if you attempt to show it to them before they go up to the ruins. You might say in that case they would again visit the museum when they returned to the parking area, but our experience tells us certainly that if you let a visitor into your museum for five minutes and then take him to your ruins he will not afterward go back into your museum. He figures he has seen your museum and so why go in there again?--F. P.

*****SWM*****

TUMACACORI

By Charlie R. Steen, junior park
archeologist, Box 2225,
Tucson, Arizona.

During the period November 24 to December 23, 846 persons visited this monument. Of the total recorded, 227 had no guide service, 619 were guided through the mission, and 51 were shown the small collection housed in the old office.

Custodian Louis Caywood returned from Berkeley, California, on the evening of December 23. Caywood has been working, on official business, at the western Museum Laboratories for the past two months.

The most important single happening of the month was the completion of the new museum and administration building. Except for a few minor jobs which cannot be done until the exhibit cases arrive, the building is complete and has been accepted and the custodian's office has been moved into the new quarters in the lobby. Caywood and I intend to set up an altar and offer daily sacrifices to Jupiter to insure prompt arrival of the exhibits from Berkeley.

Park Service visitors for the month included Frank Pinkley, Hugh Miller, J. H. Tovrea, Charles Richey, Charles Macquire, David Jones, Parke Soule, Luis Castellum, Natt Dodge, and William Butler.

Father Bonaventure of the Franciscan Missions to the Papago was here for about fifteen minutes one morning. With Father Bonaventure was a missionary from Santa Barbara, California.

TUMACACORI (CONT.)

On the morning of December 11, an automobile driven by a Mr. Campbell of Tucson turned into the monument parking area. There would be no need to report this occurrence if Mr. Campbell hadn't cut in front of a car which was being driven at a high rate of speed from Nogales. Of five persons in the two cars, two were slightly injured and were given rudimentary first aid treatment before being sent into Nogales. Both cars were badly wrecked. As the accident occurred on the highway right-of-way, the investigations were made by a highway patrolman.

A slight rain fell on the first day of the month and occasional heavy showers on the 12th and 13th.

*****SWM*****

Padre Bonaventure and his friend dropped in at headquarters and we had a pleasant hour together. I think the Padre first came to the Casa Grande about 1907 and our friendship has remained firm through the years. At that time his superior officers had placed him in charge of a territory about 250 miles east and west and 150 miles north and south containing about 5,000 Papago Indians scattered hither and yon through the country. He had a team and spring wagon with a camping outfit and all he had to do was to doctor and preach to and marry and bury all the Indians he could reach. The remainder of the time could be used to learn the language and keep abreast with his studies.

The Padre and his friend had just been making a study of the route of Fray Marcos de Niza through the country from Sonora to the Zuni country in 1539, trying to establish the day-by-day journey, camping places, etc. and they have a flock of mighty interesting facts and theories which they promise to put into print so we can all share them. For instance, it looks as if they may be able to check the Fray Marcos inscription, over south of Phoenix, as having a high probability of being authentic. Their report will be well worth your study.--F. P.

*****SWM*****

EL MORRO

By Robert R. Budlong, custodian,
Ramah, New Mexico..

Ah, I have sighed to rest me. The other day, during my absence from the monument, some brilliant water-hauler arrived, filled the syphon, and drove away without draining the line. I have this day dug out of the frozen ground over 300 feet of pipe, and have succeeded in thawing out the pipe by pouring gasoline in the trench and igniting it. But the pipe has burst in four places, and I see where I have quite a little work yet ahead of me, getting it so it will hold water. That ground was frozen solid, and it was just like digging in rock. The pick just bounced back.

EL MORRO (CONT.)

The month really can't have gone already, but the calendar tells us it has. Seems such a short time since I sent in the last report, and I imagine that since the days have been growing shorter all the time, that would account for it. Anyhow, there is little to report this month, but we'll do our best.

TRAVEL

A total of 66 persons visited this monument during the travel month. Eight of these arrived while we were in town buying supplies, and were not contacted. Eight more drove up about midnight, December 7, on their way to the Shalako. They parked their car some distance away, and we didn't hear them until they returned to the car. They were contacted, but had gone around the inscriptions by themselves.

The remaining 50 persons were taken on 14 trips around the inscriptions; total time, 965 minutes. These trips averaged 68.9 minutes each. We also had seven "office" or "educational" visits from those who also took field trips. These office visits are rather hard to define. We have no museum, but after returning from a trip around the inscriptions, the more interested visitors who have spare time are brought into the cabin where various and sundry matters are discussed. This is educational work, and includes the showing of natural-color slides dealing with points of interest nearby, or connected with the inscriptions; the showing of photographs of other monuments, of Navajo life, etc; discussion of various matters of historical interest. We feel that these office visits contribute much of value to the educational set-up.

These extra "educational visits" totaled 7; total time, 680 minutes; average time, 97.1 minutes.

We were most pleased to have Erik Reed, of the Santa Fe office, as a visitor on December 9. We hiked over the rock and looked over the ruins, and spent some time in the cabin discussing various matters.

WEATHER

Cold days; a few snow flurries. The snow still lingers on the ground, being about six inches in depth on the north side of the rock. Minimum observed during the month, seven degrees above zero. We have written in about having maximum and minimum thermometers installed here, and if we get them, we'll be in a position to give more data relative to weather.

MOISTURE

Boss, I was slightly timid about putting this paragraph under the heading of "Water", since I have more or less spoken my mind about it

EL MORRO (CONT.)

In the past. So I hid the topic under the foregoing heading. But the stuff is - well, the last remark I heard, from a visitor, was the single word "Lousy!" Since you called my labors of the past month, in my last report, by the revised phrase "we are working like everything" when I had properly described it, I feel I must refrain from using appropriate language pertaining to this water.

From now on, we'll have to thaw out snow. The water in the pool is so miserable we wouldn't even use it for poor fertilizer, so we contemplate thawing out snow from this time on until roads become open again in the spring. Ever try melting snow? You take a shovel and dig tons of snow, and pile it in a washtub on the stove. By the time the snow has melted, you have a few drops of flat-tasting liquid that some people are pleased to call water.

QUARTERS

The cabin has had a few more loads of dirt piled around it. The roof has been re-covered where necessary, and the entire roof given a coating of roofing compound to stop leaks. The metal door on the cellar has been painted a light brown to blend in with the surrounding earth, and to render the door less conspicuous.

INSCRIPTIONS

More pencilling is being done on the inscriptions, and they are nearly ready for winter. Our experiments with hardening the sandstone have not been completed, due to constant below-freezing weather.

OFFICIAL TRIPS

Remarkable how quickly a perfectly good monument can go to seed. I understand that at de Chelly they are making plans to hold special examinations for future de Chelly rangers. It seems that after some years experience at Aztec, they feel that they should specify that would-be-rangers for de Chelly should be able to do tap dancing, give song-and-dance performances, and do sleight-of-hand tricks. By which I mean to suggest that during the month I paid a visit to that gully in the sandstone to get the remainder of my belongings. We were received most cordially by Johnwill, Mrs. Johnwill, and the Springoff, and spent a most enjoyable evening. I understand that up there they are finding out how to stick a once-perfectly-good car in quicksand. Of course, there are three classes of people in the world: those who learn by the experiences of others; those who learn by their own experiences, and those who never learn. I'll mention no names, but will guarantee that I can stick a car in the quicksands of de Chelly second only to the present personnel of that once renowned national monument.

SUPPLIES

We are fairly well fixed for our winter's supply of food. The cellar contains enormous quantities of vegetables and staples, and is one of the most valued of our few structures at this monument. At the foot of the bed in the blue room reposes the left hind leg of a graveyard steer--seventy pounds of beef. It is parked at the foot of the bed beside the refrigerator, the snowshoes and skis, and the blacksmith shop, for I can't decide where else to put it. There is no other room inside. It should be hung in a tree, of course, but I still haven't recovered from a most sad occurrence of only a week ago. Blame it on this program for the conservation of our wild life. I had hung a side of pig in a tall tree, some twenty feet from the ground, where I had thought it would be safe. But during one dark night something that must have been a giraffe wandered by and stole it. So we keep the meat in the bedroom. Do you have any other suggestions? How about getting a house built here?

GENERAL

Rumor reaches me (now, I may be mistaken) that McKinney, formerly of the Chaco, after listing the number of possible jobs he could undertake at his monument during the winter, was so appalled at the amount of labor involved that he has transferred to Arizona, where one may sit around and bask in the sun, rather than freeze in the New Mexico shade. Alas, poor Yorick, I knew him well. (Ed. note: Yeah, you are mistaken.)

But I told you there was no news. Christmas is just a few days away, and we extend a most sincere wish to you all for a very pleasant Yuletide season and a successful New Year.

*****SWM*****

I never melted much snow myself, Bud, being from a part of the country which didn't get very cold, though we did get it thirty below once I remember, but I will turn your question over to Al. Dicknell who checked the lowest temperature ever reported out of Yellowstone, sixty below I believe he said; anyway it was low enough that they didn't believe him and had to check the thermometer quite awhile for accuracy before they would take its word. And they have some snow up there too. I always like to tell that story about the fellows on game patrol snowshoeing over and sitting down on the cross arm of a telephone pole to eat lunch. Of course that was in the later days when they were sissy and had telephone poles to sit on; I think Al's time in the Yellowstone runs back before such luxuries.--F. P.

*****SWM*****

BANDELIER

By C. G. Harkins, custodian,
Santa Fe, New Mexico.

TRAVEL

Total travel-	- - - - -	263
Total contacts-	- - - - -	383
Number of field trips	- - - - -	29
Number of museum trips-	- - - - -	28
Number of special groups-	- - - - -	53
Total guide time in field	- - - - -	2175 minutes
Total guide time in museum-	- - - - -	475 minutes
Total guide time special-	- - - - -	14225 minutes
Total visitor time at monument-	- - - - -	17525 minutes
Average length of field trip-	- - - - -	75 minutes
Average length of museum contact-	- - - - -	16.9 minutes
Total guide minutes	- - - - -	2465 minutes

Visitor travel shows an increase for the month of December over a like month last year, a total of 263 visitors arrived at this monument, being 35 more than during the month of December, 1936. Seven foreign countries and the District of Columbia were included in this group.

Twenty-nine parties made guided trips through the ruins, making a total of 95 people, with an average of 3.2 per party. Five parties among this group were given short lectures at the office in addition to the trip through the museum, which shows a representation of 95 people, with 28 trips averaging 16 minutes per group.

The cold weather has a tendency to discourage a great many from a trip through the ruins.

WEATHER AND ROADS

We have experienced clear days and cold nights with cold north-east winds and no precipitation during November, and up until December 12. Rain began falling the afternoon of the twelfth and continued through the night, turning to snow at 10:30 a. m. on the thirteenth. Snow continued to fall the remainder of that day, and until 6:00 a. m. the fourteenth. At that time, there was six inches of heavy wet snow on the ground and with this much needed precipitation we were able to place our roads in good condition again. A chart of the weather follows:

Days cloudy-	- - - - -	10	Mean Maximum-	- - - - -	33.35
Days partly cloudy	- - - - -	4	Mean Minimum-	- - - - -	17.74
Days clear	- - - - -	16	Mean-	- - - - -	25.54
Maximum Temperature-	- - - - -	52	Range	- - - - -	18.45
Minimum Temperature-	- - - - -	10	Precipitation	- - - - -	.53

BANDELIER (CONT.)

The State Highway Department has material on the ground and a crew working on the two bridges in the Detached Section. They are replacing the stringers and installing new decking, also putting on guard rails, a much needed precaution, as these bridges were very dangerous with no guard rails and the decking full of holes.

The recent heavy fall of snow has closed the highway over the Jemez Mountains.

GENERAL

Considerable work has been accomplished on the Detached Section the past month. Repairs have been made to all the fences where they cross the washes, also repairs to the shoulders of the highway where they were washed away earlier in the year. Cattle are being turned loose on the Ramon Vigil Grant, and as this land joins the Detached Section of Bandelier National Monument, we will have more or less trouble with stock on the monument, due to the gates being left open. Wood hauling is in full swing from the Ramon Vigil Grant. Up to the present time, no violations have been committed on the Detached Section, mainly due to the fact that all available wood had been taken from the area several years before the Park Service came into possession of it. Heavy traffic contingent with wood hauling is causing the road to become extremely rough and dusty, and with no precipitation the past two months, we had not been able to remedy the condition previous to the snow-fall of December 12.

Work has continued very satisfactorily on the stabilization project on the Community House which in all probability will be completed in January.

At odd times we have been hauling wood against the time when there will be other work to do and no wood for the residences.

The comfort stations have been drained in preparation for cold weather of the winter months, also the floors of both stations have been painted for next seasons travel.

NEWSWORTHY VISITORS

November 30. Mr. and Mrs. Dick Lovald, Gallup, New Mexico.

December 3. Major General Holmes of the British Army, London, England; Captain Staiger, sub-district commander, CCC, Santa Fe.

December 6. Mr. and Mrs. Theodore Wirth, Minneapolis, Minnesota. (Conrad L. Wirth, assistant director, is their son.)

Sir Walter and Lady Moberly of London, England.

BANDELIER (CONT.)

December 11. Frank E. Andrews, supervisor, Santa Fe National Forest.

Lieutenant Garritson, SP-1-N, Santa Fe, New Mexico.

December 21. Dr. and Mrs. H. Gowers, Vienna, Austria.

NATIONAL PARK SERVICE VISITORS

November 25. Erik K. Reed, assistant regional archeologist.

December 1. Frank Russell, Richard Ferris, L. C. Fuller, and Arthur Merkle, recreation study supervisors.

December 6. Harvey H. Cornell, landscape architect, and Milo F. Christianson, recreational planner. Milton J. McColm, assistant regional director, Santa Fe.

December 17. Mr. John H. Diehl, regional engineer, Santa Fe. Mr. H. E. Rothrock, Washington, D. C.

December 19. Mr. W. H. Wirt, regional forester. Mr. W. W. Yeager, assistant forester. Mr. Fred H. Strieby, fiscal supervisor. Mr. F. L. Cook, forester, San Francisco, California. Mr. Hugh M. Miller, assistant superintendent, Southwestern Monuments. Mr. H. L. Bill, Grand Canyon National Park.

THE MERRIAM TURKEY

The Merriam Turkey, or Wild Turkey as it is generally called in all localities, is prevalent in the area surrounding Bandelier National Monument and is exceptionally numerous within the confines of the monument itself, especially on the South Mesa. The general area is protected by the state game regulations of New Mexico which allow a two week hunting period in the fall of the year. Hunting of any kind at any time is, of course, prohibited in the national monument. The Merriam Turkey, which today frequents this area, is the same bird which was domesticated, or at least held in captivity, by the Aztecs, and which is believed to have been domesticated by the Indians who made their home in Frijoles Canyon, now embraced in the monument. The following is a brief summary of the known facts concerning this turkey:

Although the best breeders among domestic turkeys are yearlings of both sexes, such is not the case with the wild species. In all probability, wild turkeys actually breed at two years. Wild gobblers in confinement first breed at this age, although yearling hens have been known to breed and raise young. Such observations lead to the belief that domestication has evidently advanced the minimum breeding age of the hen both as to capacity and inclination. However, authoritative sources concur that wild turkeys actually breed at two years.

It is of interest to note that gallinaceous birds and cottontail rabbits are the fastest breeders, followed by river ducks, squirrels, and wild turkey, in the order named. The swan and the turkey are

unique in their deferred maturity.

Wild turkey flocks are probably family units, at least in the early fall. The gobblers form packs from nesting time in the spring until the young are two-thirds grown. Turkeys practice polygamy of the true harem type, four to five hens being appropriated and herded about by one male until nesting time, when the hens nest nearby. In captivity, if there is only one gobbler present, the male rejoins the hen as soon as the brood hatches; but if there is more than one gobbler, they all flock together until the broods are two-thirds grown. Their clutch consists of nine to twelve, and the incubation period is 26-28 days. The hen has only one brood a year.

Staple winter foods of the Merriam Turkey are acorns, pinyon nuts, and corn if available, but they can subsist on other things. Although the wild turkey of the eastern United States requires considerable drinking water, it is said by many that the Merriam Turkey of New Mexico can survive for extended periods without drinking water. At any rate, it is tentatively agreed that the Merriam Turkey's minimum water requirements are nothing more than succulence of plants and dew. The ideal turkey range should, however, offer frequent water places.

Wild Turkeys thrive best on forest land with partial interspersions of grassland, brushland, or cultivated areas. Turkeys do not have a long cruising radius, and seldom leave the land on which they were raised; the extremes of their range under normal conditions reaching not more than five miles from the breeding grounds.

A complete, accurate census of wild turkey is almost impossible. As an example of possible error inherent in all census work where small areas are relied upon to sample population density, it is on record that an observer reported 15 turkeys within a radius of half a mile. Taken literally, this means 500 acres, or one nest per 33 acres. This count was shown to be extremely high when a later census was extended to cover a much more representative area. A rough census of wild turkey can be obtained by a direct count of nests over a large area, but the result is merely an index to turkey abundance or vice-versa.

In so far as game diseases go, the turkey is generally susceptible only to blackhead, an infection carried by a caecum worm of quail. Transmission of this infection is accomplished by blackhead gaining entrance through an injury made to the membrane by the worm. The infection is spread to other hosts by the worm's egg. So far as is known, turkey in and around Bandelier National Monument are not, and have not, been generally subject to blackhead.

It is interest to note that Bandelier National Monument is somewhat near the center of New Mexico, a state, together with Pennsylvania, which has a most advanced game refuge system in so far that turkey

BANDELIER (CONT.)

are closely protected in the same areas set aside for deer refuge.

The basic function of a refuge is to produce an outflow of game to stock surrounding range, hence the area surrounding Bandelier National Monument should be afforded the Merriam Turkey for many years to come.

*****SWM*****

This is a good report and especially are we glad to have the nature notes on the Merriam Turkey.

I might say here that the good report Mr. Miller brought back from Bandelier included the general operation of the monument under Mr. Harkins; he said things were in fine shape and Cy was doing a good job.

We are glad to hear those highway bridges are at last getting proper repairs; we have been trying to get that done for these two or three years and have a large file built up on it.--F. P.

*****SWM*****

BANDELIER CCC

By James M. Eden, acting project
superintendent, Box 669,
Santa Fe, New Mexico.

The inside forms of the 20,000 gallon concrete reservoir have been removed and a small crew has been at work making the necessary pipe connections during the latter part of the month.

Wall construction of Unit No. 2, lobby and sales room of the Hotel Development, has now been completed to the height of approximately four feet on all elevations.

The wall construction of five rooms in the employee's dormitory (Hotel Development) are complete to lintel height; footings of the remainder of this project have been laid.

The ruins stabilization crew has been working on the Community House during the entire month. Approximately 110 rooms have been completed this month.

The plans for the proposed telephone line project have been completed this month.

There has been a crew quarrying and shaping building stones in the rock quarry during the entire month.

Eight pieces of furniture were completed by the carpenter crew

Eight pieces of furniture were completed by the carpenter crew during the past month, and these will be turned over to the custodian for permanent monument use in the near future.

*****SWM*****

I might add incidentally that Hugh Miller came in from a field trip to Bandelier with a glowing account of the CCC work which was going on at that monument. Mr. Hendron sent in during the month a completion report on the stabilization of the kiva in the Ceremonial Cave. We hope to use this report in a forthcoming Supplement and thus make the repair work of this year a matter of permanent record.--F. P.

*****SWM*****

BANDELIER RUINS STABILIZATION

By J. W. Hendron, Foreman, Box 669, Santa Fe, New Mexico.

Tyonyi, the great community apartment house, is the largest structure in Frijoles Canyon and one of the largest in the entire monument. It was excavated in part by the School of American Archaeology a number of years ago, some 240 rooms being cleaned out. The excavations revealed that the building was more or less circular in form and that it was primarily used for protective purposes in as much as the rooms completely enclose the patio or inner court, which is more than 150 feet in diameter, and the only entrance was fortified by a half circle stone wall through which was a narrow doorway. In this manner the inhabitants entered the big house and then, it is thought, entered their homes through hatchways in the roofs of the rooms.

There has always been some discussion as to the height of the structure, whether or not it consisted of second, third, or fourth story of rooms. Of course a stabilization project is not concerned with the formation of the structure as it was when occupied, but on the other hand it does reveal the strength of the walls. After making a study of these walls, I am satisfied that for the most part it was made up of one story rooms, and in many cases the floors are at different levels. I estimated that the walls of the rooms with the highest floor levels must have stood ten or twelve feet above the ground level around the outside of the structure. In all probability there may have been some second story rooms, that is, when they were so located as to have the protection of the walls of the rooms with the higher walls. The height gained here would have given the inhabitants adequate protection against marauders.

In the inner court of Tyonyi on the northeast side, are three small kivas, one of which has been excavated. These chambers probably were clan kivas which seem to have been vogue in prehistoric times,

BANDELIER RUINS STABILIZATION (CONT.)

but apparently have ceased to exist in most of our modern pueblos.

We have completed the stabilization of 147 of the 240-some excavated rooms. This stabilization consists of forcing mortar into the joints between the loose building stones of the standing walls, forcing wedges between the uneven stones, and then plastering over the outside. In many cases it was impossible to stabilize the walls without first laying new footings, the old ones being inadequate to hold the low walls for a great length of time. It was found that footings consisted of small chunks of tuff bedded in a mud mortar upon which were set the building stones. One can readily see how inadequate this type of building is. It is known that the Indian mixed ashes and charcoal into the mortar and this same technique is being employed in the stabilization. Spanish reports tell us that it forms a sort of a lime and that the method was practiced up and down the Rio Grande Valley proper during the first entrada in 1540. I have found that the valley soil alone will not hold up, and so it is being mixed with a clay that is being hauled 15 miles. After several rains the new effect will be removed from the walls, reproducing one that is similar to the original but much stronger.

*****SWM*****

BANDELIER FORESTRY

By James T. Fulton, foreman,
Box 669, Santa Fe, N. Mex.

During the past month I have been supervising a crew of men on Unit No. 2, lobby and sales rooms of the Hotel Development, laying the masonry wall construction.

*****SWM*****

NATURAL BRIDGES

By Zeke Johnson,
Moab, Utah.

I haven't much to report but thought I would extend to you and all the bunch New Year's greetings and tell you that we are well and still glad to be alive. We have spent thus far a very happy and pleasant Christmas, and everything looks lovely for the New Year.

I have been asked to speak only once since coming up here (to Salt Lake City) and then I had one full hour talking to about 200 very interesting people. I have contacted 200 in other places on many different occasions on the street, at home in hotel lobbies, and I always enjoy talking about the bridges and the San Juan country, and of course I am asked many questions about other parks and monuments which is all very interesting to me. I get many letters similar to the one enclosed and it takes a lot of pictures to fill all the bills so I will be obliged to have some printed as I sent this man the last ones I had.

I am very glad that after so long a time we will have no Augusta, no Edwin, and no Caroline, for I love the official names and have tried for a long time to get away from those old local names that meant nothing to me nor, I suppose, to anyone else. So now after this they will be a thing of the past.

Today Mrs. Johnson and I attended the rendition of the Messiah in the great Mormon Tabernacle. Over 12,000 people crowded in and it was a great treat. There were 300 in the choir. Two soloists were Utah people, one from New York, and one from Hollywood. I am sending you a copy of the program.

Yesterday we ate Christmas dinner with our baby daughter and her husband at Midvale and we expect to eat New Year dinner with relatives in Ogden. Enough for now! Best wishes to all.

*****SWM*****

Zeke is now drawing his winter salary of one dollar a month and seems to be getting the full worth of it. He sent us a program of the "Messiah" and made us envious of course; our radio being out of whack, we couldn't even listen in over the air.

There is still a lot of talk going the rounds about that road going west from Mesa Verde down past the bridges and over into the Bryce country. I look on it with fear and trembling but the more I think of it the less danger there appears to be in it.--F. P.

*****SWM*****

GRAN QUIVIRA

By George Boundey, custodian,
Gran Quivira, New Mexico.

VISITORS FOR DECEMBER

We arrived home from vacation on December 6. I think we must have brought the winter with us for everybody reported wonderful weather up to the time of our return. We have had four light snows during December with high winds and some blustery weather.

Our visitors have been mostly local people with visiting relatives here for the holidays.

Considerable work has been done on the highway between Corona and Gran Quivira. I understand the Corona end has been graded and made into a pretty good all-weather road, but at this end a new road has been scraped, but not graded for thirteen miles. It hasn't a single curve in it and is, at present, an excellent road for dry weather.

GRAN QUIVIRA (CONT.)

We haul our wood from the Lincoln National Forest to the east of us and I find by using the new Corona road it saves nine miles each way so it will prove quite a saving to the monument.

In spite of the snow, the birds still come in to water by the hundreds. The linnits and titmice which nested here last summer are still with us, and I have noticed several small flocks of birds much resembling the Ruby Crowned Kinglet only without the ruby crown.

Heavy snows in the higher peaks have forced many deer and quite a number of wolves down into the Cibola Forest. Local trappers report unusually good catches of coyote, bob cat, and foxes. There was a good crop of canyon nuts this fall and that probably accounts for game being more plentiful.

The bean crop here, which is our principal crop, was late. The market opened at \$4.35 a hundred but few were able to make delivery at that time and the market dropped to around three dollars. Everybody held on to theirs and the market is now back to three seventy-five with every indication of going higher, so farmers are feeling quite cheerful again.

The rabbits on the monument are so tame and have increased to a point where I was a bit worried as to the outcome, but during the past month the Great Horned Owls have been especially busy and at least a dozen rabbits have contributed food. Twice I have surprised the owl while feeding and both times the owl was not able to quite clear the ground with the rabbit. It would fly but a few feet and then rest.

*****SWM*****

CHACO CANYON

By Lewis T. McKinney, custodian,
Chaco Canyon, New Mexico.

Here is the last report for Chaco this year of 1937, and here is wishing for a better New Year for yourself and all of the Park Service personnel. I also wish, Boss, that old Santa is a visitor to each and every monument and park and that he fills your old sock clear up to where the supporter hooks on. My youngsters each have written about a dozen pages to Santa, but from the looks of my pocket-book I doubt if I can bribe him out this far from town with as many things as they want. But anyway I have them a Christmas tree and the old rock house all dolled up for him when he arrives.

I have been out to all the different ruins this month and find them in the following condition:

Pueblo Pintado has been holding its own pretty well except some

CHACO CANYON (CONT.)

pot-hunting has been done within the past six weeks. No damage done to the walls by the pot-hunters, however. The fence is in pretty good condition except where visitors and pot-hunters have been climbing over it, the wires are a bit loose, or were a bit loose, but have been tightened. "IF WE EVER GET ANY MONEY", we can build a step over these fences around the ruins that have no gate. I would certainly like to see it done. It would cost only about \$10.00 per fence and there are only four of these, which would cost about \$40.00 for all of them. But \$40.00 is a lot of money for us in the Southwestern Monuments this day and time.

Kinya-a shows a few new falls and cracks and no doubt will be damaged quite a lot by the thaws and freezes next spring. Pot-hunters have also paid us a few visits there. Visitors have done some damage to the fence by climbing over it several times in the same place.

Kinklizin hasn't been bothered any by pot-hunters, but several visitors have climbed over the fence on the east side and have caused the wire to become loose.

Kinbiniola shows some damage from weather the last few months. I have noticed where rocks have fallen from the walls in several places within the last few weeks. There are not many of the so-called pot-hunters smart enough to find this ruin, so there has not been any pot-hunting for some time. There are too many roads leading from the road that leads to Kinbiniola that the pot-hunter generally winds up some other place, rather than Kinbiniola. No damage to the fence so far, except where stock has rubbed against a post or two and bent them some.

Penasco Blanco, where we get a tree-ring date of 898 A. D., and sit on the point of the mesa about $1\frac{1}{2}$ miles west of Bonito, seems like it is watching and waiting for the time to come when the old Chaco Wash and the Escavado will tear its solid rock foundation from underneath it. So far, Penasco Blanco hasn't suffered from pot-hunters, for it is within reach of my field glasses and it is almost impossible to reach it with a motor vehicle. It has suffered quite a lot due to weather the last few months, and will no doubt suffer plenty when the spring thaws begin. It seems that in the spring when the ice and snow melt during the day, water runs into the cracks within the walls, then freezes at night. That is the time that our damage is done. Of course we lose some walls from hard freezes, also from our hard summer rains.

Tsinklitsin is showing some damage from wind erosion on the west side. Of course it sits away up there on the mesa south of Bonito about a mile and gets the west winds square against its side. The wind has taken out a lot of the mortar and small rock on the west side like it has on the west curved wall of Pueblo Bonito. There have been several rocks fallen from the walls the last months but it

CHACO CANYON (CONT.)

isn't suffering very badly. No pot-hunting has been done as it is much harder to get to than Penasco Blanco.

Hungo Pavi is certainly falling away rapidly. There is one wall about 14 feet high that will surely go before summer if there is not something done to prevent it. There are several other places that are in very bad shape. It is sure tough to sit and watch such things as the wall at Hungo Pavi go, but what can we do about it?

Ona Vida, a fine big ruin from which we got a date of 861, is also in bad shape, and will be damaged a lot more in the near future if there is not something done to prevent moisture from entering the cracks in the walls. But I am afraid there is nothing we can do about this at present.

Wejiji is suffering quite a bit also. The back wall is leaning north at the top about a foot in several places. However, this has been leaning for quite a while. I believe Caywood, Dale King, and also Reed have some pictures of the conditions at Wejiji. I have noticed some new falls from the walls and several new cracks within the last few weeks.

Chetro Ketl is the ruin that must be repaired before there is any more digging done if we expect to have anything left of it beside a lot of reconstructed walls. The big Kiva, that the school excavated a few summers back, was almost completely demolished during the big rains last summer. I don't mean the Great Kiva, but the large Kiva in the west court. Great Kiva was also damaged quite a lot on the south and east sides because there was not any way for the water to drain away from the Kiva and it had to go through the wall. All the water from the west court drains into the Kiva that is in about the center of the court. After one of our Chaco rains last July, Ranger Hastings measured three feet and two inches of water in this Kiva. The fire place was almost completely wrecked, a lot of the bench just melted away and slid to the floor of the Kiva.

Talus Unit #1 was repaired some by the School of American Research last summer on the north side where the flood water had damaged the walls from pouring over the canyon walls onto the ruin walls, but water can still pour over the walls just as it did before they repaired them. How can we save the wonderful plaster on the wall of the Talus Unit that was uncovered last summer? It has already begun to crumble away, and no doubt our next summer rains will take a lot of it.

Pueblo del Arroyo, the big old ruin that sits on the very banks of the Chaco Wash and is slowly being taken away by the flood waters is also suffering from the weather as well as being washed away by the flood waters. The Soil Conservation Service has done a lot to

CHACO CANYON (CONT.)

save this wonderful old apartment house, but some one must do a lot **more before it is** out of danger.

Casa Renconada, across the canyon from Pueblo Bonito, is in good condition, as the School of American Research started reconstructing it more than a year ago.

Kinkletsoi could stand some repair work as it has begun to show wear and tear from the old man weather. The Soil Conservation Service has also done a lot to help save this old yellow house, but it is still in immediate danger and something more should be done to prevent this ruin from going down the Chaco during some of our floods, like some of our smaller ruins have in the past.

Pueblo Bonito still stands at the base of Threatening Rock with her old five-story head still sticking away up there in the air, as it has been for more than a thousand years. She seems to think that her 800 rooms are just as safe from Threatening Rock as they were the day they were built. But it has moved, so why can't it move again, and just how much will it have to move before Bonito will be in danger? Or is it in danger at **present**? Gosh, what a mess we will have if it does fall. And then what will it cost us to clean up the mess? Along with the mess we will lose all the wonderful work that those old fellows put at the base of Threatening Rock to keep it from falling.

Threatening Rock now measures 2 5/8 inches at the east end, 2 11/16 inches in the center and 2 9/16 inches at the west end. (See September report for more information)

The Soil Conservation Service plans quite a lot of work here in the canyon, if they can find the money to do it with. They are still doing some **maintenance** work on the large water-drop structure up near the Hungo Pavi Ruins. The nights are getting so cold that it is almost impossible for them to do any work with concrete.

The School of American Research Station now has ten hogans completed and have started on the eleventh one. Their main building is complete.

A. P. Springstead has sold out his trading post here in the monument to Arthur B. Tanner from Kirkland, New Mexico. We all surely hate to see the Springsteads leave the Canyon, for they have worked more than 100 per cent with the Park Service since they have been in business here at Chaco. Thelma (Mrs. Springstead) has certainly been a "Godsend" for our visitors. She could and would with a big smile, find something more to eat and another bed for some tired visitor that had arrived late. And no wonder "**old man**" (Colonel) Springstead always has a big smile, from the kind of cooking Thelma feeds him.

CHACO CANYON (CONT.)

But a finer couple will never be found to fill their place here in this great old land called Chaco. It certainly grieves all concerned to see them leave us. The Tanners seem to be our kind of folks and are swell people, and no doubt will do everything within their power to fill the place that the Springsteads left. We welcome the Tanners with all of our hearts and hope they see things as we do, and help us all make this a worthwhile and comfortable place for our visitors.

We have had .16 of an inch of precipitation this month, four cloudy days including today, seven partly cloudy ones, and the balance clear. The maximum has only been up to 57° on the 8th., and minimum down to 6 degrees on the 21st. It's sure been sharp around the edges this month, Boss, but it causes these slow, lazy guys like myself to pep up a bit (going from one fire to the other).

It looks like our visitors are side-stepping us for a spell, but I guess they are floating down in your part of the country for a while, Boss. Well, this is a pretty good place to be from, for the next month or so. Eighty-seven people have visited the monument from the following states: Montana, New Jersey, Minnesota, Colorado, Arizona, New Mexico, Texas, Missouri, and Utah. We have had this month as visitors on official business from the Soil Conservation Service, O. E. Gianni, Leo Carden, Bert Lucas, Bert Cottingham, Guy Murphy, Buster Charles, and Merrill Strong. Park Service visitors this month consisted of Custodian Miller and Mrs. Custodian from Aztec National Monument.

Guess I will end this report and go out and throw a few shovels of dirt out of the new cesspool we are digging. I want to get it all finished before the ground freezes. Again a MERRY CHRISTMAS and a happy New Year.

*****SWM*****

MONTEZUMA CASTLE

By Earl Jackson, custodian,
Camp Verde, Arizona.

STATISTICAL

Visitors- - - - -	-403.	Last year: 512.
Arizona by cars - - - - -	-232.	57.56% of total.
California by cars- - - - -	- 92.	22.82% of total.
Total states- - - - -	- 23.	
Foreign countries - - - - -	- 3.	Finland, Alberta, England.
Conveyance:		
Cars- - - - -	-118.	
Horseback - - - - -	- 3.	
Contacts:		
Guided field trips- - - - -	-106.	
Attendance- - - - -	-318.	
Trips through Castle- - - - -	- 88.	

MONTEZUMA CASTLE (CONT.)

Those who climbed ladders- - - - -251. 62.28% of total on trips.
Average persons per trip party*- - 3.92
Average persons per trip group** - 3.
Average trip time per party- - - 51.53
Average trip time per group- - - 39. minutes
Museum talks - - - - - 90.
Attendance - - - - -278.
Average persons per talk party - - 4.1
Average persons per talk group - - 3.
Average talk time per party- - - 21. minutes
Average talk time per group- - - 16 minutes
Special guide trips- - - - - 4.
Attendance - - - - - 11.
Average party and group time - - - 18. minutes.
Unguided trips - - - - - 62.
Persons- - - - -213.
Average unguided trip time - - - 16. minutes.
Average actual guide and lecture time - 56 minutes.
Average group minutes in monument - - - 77 minutes.

* Party means total persons on part or all of a trip.

**Groups are natural arrival units of a party.

WEATHER AND ROADS

Weather has been mild for this season. There were eight cloudy days, and six partly cloudy. Precipitation was .59 inch, occurring on December 2, 12, and 13. Very heavy mist occurred on December 3 and 11. Picture this if you can: on the evening of December 12, after drizzling winter rain all day, we were sitting in a semicircle in front of the fireplace with a big log burning to keep us warm. Of a sudden a vigorous summer shower struck, and a regular summer thunder storm broke loose, with more lightning than we had seen in many months. After 30 minutes of this interlude, winter took the stage again.

Roads are in fair condition through the valley. The first part of the month saw them very rough from corrugations; the latter half of the month saw timely bladework after rains, and much improvement.

SPECIAL VISITORS

Park Service: December 15 - Chuck Richey, regional landscape architect, and J. H. Tovrea, assistant engineer, paid the monument an inspection trip together.

Other Visitors: November 27 - Charles W. Lincoln and family were very interested visitors. He is a doctor of dental surgery, from Pasadena, California, and was intrigued by the dental equipment of our skulls (historic).

MONTEZUMA CASTLE (CONT.)

November 28 - Bill Eaton, son of the "Big Bill" Eaton of Wyoming dude-ranch fame, paid his first visit of the season.

C. O. N. Gibson, a nephew of Charles Dana Gibson, was a visitor.

December 6 - Walter R. Steyer, sales engineer for the H. H. Robertson Company, of Los Angeles, was a very interested visitor.

December 14- Wesley Knorp, general manager of the Arizona Republic and Gazette, was a visitor. With him were Jack Forbes, Earl Leuch, and Jack Kimball, advertising men for the Republic.

PUBLICITY

Dr. Charles W. Lincoln took photographs of all the skulls in our collection. These photographs and data obtained from them are to be used in a scientific paper to be read before a dental convention.

In the Fond du Lac Commonwealth Reporter, Fond du Lac, Wisconsin, for December 6, occurred a two column feature article entitled "Fred G. Steenberg Writes of Explorations Made in Montezuma Castle, Arizona."

CONSTRUCTION

Ranger Jennings and the custodian constructed a standard thermometer shelter out of scrap lumber.

ACCESSIONS

From Headquarters we obtained two used flat-top museum cases, which will soon be installed in the museum.

NATURE NOTES

On December 3, at about 3:30 p. m., we saw the last lizard of the season. He escaped before we could even tentatively identify him.

On December 8, Jane Jennings smelled the presence of a skunk in the vicinity.

On December 10, Jesse Jennings' mother reported a theft from the ranger tent-house. It appears that a pack rat or trade rat had a hole in the bank near the creek. One opening of the hole is exposed by the cut-bank of the creek. She found where Mr. Rat had deposited a great number of shiny six-penny nails in his nest, and about fifty of them had fallen through the creek-side opening onto the bank below.

MONTEZUMA CASTLE (CONT.)

On December 11, we saw the first sprouts of alfilaria, coming up in our back yard.

On this same day we made our last notation of the season on ants. The big black ants (Crazy Ants) still had the door to their den open, and were very active.

On December 15, we saw the last snake of the season. It was a brown garter snake about 16 inches long.

On December 20, we saw a porcupine on a cottonwood tree near the upper end of the monument. There was no indication that he had been eating any of the bark. He simply sat in the crotch of a limb about 12 feet above the ground and watched us.

(For bird notes, see Betty Jackson's report).

GENERAL

Can't feel at all bad about affairs around here. Visitors have been more interested than usual, or we have been doing our stuff better, or both. There is an encouraging increase in museum time and in trip time. The stuffed rattlesnake and the mounted insects in life-like postures are doing their bit toward increasing museum time.

The custodian made a trip to headquarters, spending the first and second of the month there. This was a very worthwhile trip, in which some rough edges were shaved off his personality by the headquarters staff, and in which he got some good ideas for the improvement of the educational features of the monument. Wish there could be a more frequent get-together between the field men and headquarters.

Ranger Jennings went to headquarters on December 8 to pick up museum cases, and was retained there on special detail until his return on December 13.

Will sign off for this month and wish everybody a Merry Christmas and Happy New Year.

*****SWM*****

BIRDS AT MONTEZUMA CASTLE

By Betty Jackson.

We have a longer list of birds seen this month than in any previous month, for besides the 31 species definitely or tentatively identified, Jane has seen three others which we can't track down as yet. Here is the list:

Chestnut-backed Bluebird - - - - -All month.

BIRDS AT MONTEZUMA (CONT.)

Arizona Cardinal	- - - - -	-All month.
Coot	- - - - -	-December 20.
Mourning Dove	- - - - -	-All month.
House Finch	- - - - -	-All month.
Red-shafted Flicker	- - - - -	-All month, four now.
Cooper Hawk	- - - - -	-All month.
Desert Sparrow Hawk	- - - - -	-All month.
Red-tailed Hawk	- - - - -	-All month.
Green-backed Goldfinches	- - - - -	-December 20, 40 plus.
Treganza Blue Heron	- - - - -	-December 20.
Arizona Jay	- - - - -	-December 5 in scrub oak, December 16 in Mesquite.
Oregon Junco	- - - - -	-All month.
Pink-sided Junco	- - - - -	-All month.
Belted Kingfisher	- - - - -	-All month.
Ashy Ruby Crowned Kinglet	- - - - -	-All month.
Merganser (?)	- - - - -	-December 20.
Gambel Quail	- - - - -	-All month. Counted 36 the morning of December 24.
American Raven	- - - - -	-November 30 and December 8 and 23.
Road-Runner	- - - - -	-November 27.
Western Robin	- - - - -	-All month.
Red-naped Sapsucker	- - - - -	-All month.
Townsend Solitaire	- - - - -	-December 1.
Gambel Sparrow	- - - - -	-All month.
Western Chipping Sparrow	- - - - -	-All month.
Sparrow sp.	- - - - -	-All month.
Crissal Thrasher (pair)	- - - - -	-All month. Lately in hack- berry instead of feeding on the ground.
Cactus Woodpecker (pair)	- - - - -	-All month.
Cedar Waxwing	- - - - -	-Arrived December 1. Now 20 of them.
Gila Woodpecker	- - - - -	-All month.
Baird-Bewick Wren	- - - - -	-All month. He's the one I called Western Warbling Vireo last month.

On December second at about 7:00 a. m., a big dead ash tree, which has overhung the creek and formed a perch for kingfishers, hawks, and Black Phoebes for years, gave up and fell across the creek. The phoebes won't mind, but the kingfishers and hawks will probably abandon it for a loftier look-out.

On December third, Jess called me out, and we watched a Desert Sparrow Hawk chase a big Red-tail for several minutes. Finally the Red-tail went off over the cliff, and the Sparrow Hawk lost interest. Jane was watching the proceasure too, and apparently had more patience

BIRDS AT MONTEZUMA CASTLE (CONT.)

than I, because she says the Red-tail came back twice afterwards, each time being driven off by the Sparrow Hawk. It was more of an argument than a fight, because no feathers flew, and apparently the Sparrow Hawk never came in contact with, but only swooped close to and annoyed the Red-tail.

Jane and Mrs. Jennings were raking leaves on December 11 when a Western Robin dropped down close to them. When they stopped raking and talking, he acted rather nervous but, as soon as soon as they went back to work, he started picking around for grubs, not at all disturbed. He often got within 12 feet of them. When a flock of robins flew overhead, he was terrified. The first time he flew off. Later he cringed under a mesquite 'till they had gone.

He was back again on the 13th and 14th, and by the 15th had acquired enough courage so he drove other birds away.

The kingfishers are a scrappy lot. On November 25, one of them was chased by a bird who had a longer wingspread and a narrower body. On December 16 Mrs. Jennings heard a racket and looked out to see two kingfishers, each sitting on a rock in the creek, having a loud argument. As she watched, one of them flew toward the other, and was coming so fast that he knocked him off his stone into the creek.--Yes, he got out.

The next day another fight was staged, and after that there has been only one on the creek here. It must be his private feeding area. He is seen before seven in the morning, and between four and dark at night.

On December 20, Earl assisted me in getting a Christmas census of Birds for Bird-Lore Magazine. We saw 22 species, and over 172 individuals. It was a long, cold job, with a northeast wind blowing and not a speck of sunshine all day, but we got some interesting records. They included two flights of ducks, one of ten and one of six, flying in a wedge -- I think they were Mergansers --, and a group of at least forty Green-backed Goldfinches.

*****SWM*****

This is another good report from the Jacksons and from that array of visitor figures it looks like Earl and Jess sat up nights working up the SWM 16 figures.

Incidentally, we want to thank Earl for loaning Jess to us for a few days for a special field job; we knew it meant doubling up his work while Jess was away, but we were in a jam and that was the only way out.

Everybody at headquarters congratulates the Jacksons on the
SOUTHWESTERN MONUMENTS

BIRDS AT MONTEZUMA CASTLE (CONT.)

arrival of the new son and heir and we all wish the best luck in the world to the new Park Service member.

*****SWM*****

CASA GRANDE

By A. T. Bicknell, custodian,
Coolidge, Arizona.

WEATHER

Days clear- - - - -	-20	Mean Max. Temperature- - -	-68.5
Days partly cloudy- - - - -	7	Min. Temperature - - - - -	-28°
Days cloudy - - - - -	4	Mean Min. Temperature- - -	-35.4
Max. Temperature- - - - -	-79°	Precipitation- - - - -	.87

The weather for the past month has been somewhat warmer than in the preceding years in that the night temperatures are above normal. In addition, we received our first good rain since September. It is interesting to see how quickly the desert plants respond to the rains.

GENERAL

The total travel for the month is somewhat below normal with only 2,931 visitors. Of these, 2,584 were guided through the ruins, the museum, or both.

Visitors represented 43 states, Washington, D. C., Alaska, the Canal Zone, and four foreign countries, namely: England, Germany, Denmark, and Switzerland. Approximately 75 percent of our visitors came from the following states: Arizona, 40%; California, 16%; Texas, 6%; Oklahoma, 6%; Colorado, 3%; Illinois, 3%. Other states represented by more than 20 visitors were in this order: New York, Wisconsin, Washington, Iowa, Ohio, and Kansas.

Ranger Erskine left for Boulder Dam Recreational Area on November 29, his position being filled temporarily by transferring Ranger Jones from Wupatki National Monument. All of us feel the loss of Don and Marie in both our work and social life.

The three CCC guides are proving themselves invaluable in handling the visitors. Not only are they interested in their work, but they are eager to acquire that background which is so necessary to a guide in an archeological monument. If the time spent with a party is any criterion of the guide, the boys will soon be on a par with veteran guides.

"Teddy" Baehr was on sick leave several days during the month, his position being filled temporarily by Dan Havens.

Ominous rumblings can be heard around the monument after hours.

CASA GRANDE (CONT.)

Someone suggested that the museum ought to be rearranged. Everyone agreed to that extent, but no further. The participants are classified as being on the side of the naturalists, the Boss, or on the fence. If these winter nights last long enough, there is a possibility that something might come of it.

On December 9 it was possible, through the courtesy of Julian Hayden and Elizabeth Harte, for Rangers Jones and Jennings to watch an old Pima woman make pottery. From this we hope to work up an interesting exhibit for the museum.

Al Kuehl (Grand Canyon) and Ranger Bill Butler (Mount Rainier) came down to visit and brought along some movies of their respective parks. The movies were fine, but it is still hard to convince some of us "desert rats" that there is ten feet of snow at Rainier in the summer.

USE OF MONUMENT FACILITIES BY THE PUBLIC

Total travel: 1937---2931; 1936---3052; 1935---2135.

Of the 2,931 visitors to the monument, 2,584 were guided through the ruins, the museum, or both. It required 16,669 minutes to guide 537 parties through the ruins for an average time of 31 minutes. In the museum, 9,500 minutes were spent guiding 154 parties for an average time of 21 minutes.

Numerous groups used the picnic grounds during the days, but there were no overnight campers, possibly due to the cool nights. Among the groups visiting the monument were: 30 boys from the Fresno Ranch School on November 26, 15 members of the Phoenix Motorcycle Club on December 5, and 33 Pima students from the Salt River Indian School at Scottsdale on December 8.

On December 23, we were pleasantly surprised with Christmas carols sung by the Coolidge Grammar School Glee Club.

VISITORS

National Park Service visitors to the monument included: Mr. and Mrs. W. J. Lippincott, Western Museum Laboratories; Chuck Richey, district landscape architect; Al Kuehl, assistant landscape architect; Paul Franke, assistant superintendent at Mesa Verde National Park; Ranger Bill Leicht (Grand Canyon); Ranger Bill Butler and wife (Mount Rainier); Custodian Jackson and Ranger Jennings from Montezuma Castle; Custodian Boundey and family from Gran Quivira; Ranger Felton and wife, White Sands; and Custodian Caywood and wife, Tumacacori.

Among the other visitors to the monument were: Project Superin-

CASA GRANDE (CONT.)

tendent Bill Stevenson from Chiricahua National Monument; State CCC Inspector Jack Haile; CCC Engineer Cliff London at Chaco; Dr. and Mrs. Harold S. Colton, and Katherine Bartlett of the Museum of Northern Arizona; Harry Hommon, Bureau of Public Health; Dr. Verne Ray, University of Washington, anthropologist; Julian Hayden, Pueblo Grande, Phoenix.

IMPROVEMENTS AND EQUIPMENT

Work accomplished by our General Mechanic Eugene Stonehocker during the month is as follows: overhauling of Chevrolet USDI 8114, started last month, has been completed; installation of a reconditioned motor in USDI 13781; repairing and replacing driveshaft housing, universal joint, radius, and brake rods on USDI 8076; and general repairing on the automotive equipment at headquarters.

Considerable improvements were made in the quarters this month. In Park Naturalist King's quarters two coats of calcimine were applied to the walls of the living room, bath room, and the enclosed porch. A new "Hot Stream" water heater was installed, also a Super-Fex oil heater. The service porch was calcimined in Assistant Superintendent Miller's quarters. To provide additional room in the bachelors' quarters, the screen porch was enclosed and two windows were framed in for light and ventilation. Oil heaters were installed in Junior Naturalist Dodge's quarters, and in the naturalists' office. With the installation of the heaters this winter, the personnel on the monument seems to keep pretty well thawed out. A meter exchange was made in the Chief Clerk's quarters to care for the electric stove.

Included in the new equipment is a new Chevrolet Coach for the "Boss". It will be known as USDI 13916. From the Federal Housing Administration, nine Duo Therm Heaters, three Electrolux refrigerators, two washing machines and ironers.

CASA GRANDE CCC

After getting the camp buildings well toward completion, Mr. Dale's carpenter crew was transferred back to the main camp at Chiricahua on December 4. On this date Foreman Joe R. Hobbs and his crew arrived, and under his supervision, the work has progressed nicely throughout the month.

With the exception of a few minor details, our camp is well established. Modern conveniences furnished are electricity from the U. S. Indian Service, refrigeration, and a modern bath house.

Guide and Contact: Seventy-six man days were spent conducting visitors through the Casa Grande and the museum. Another activity of our guides is helping with mimeograph work.

CASA GRANDE CCC (CONT.)

On the 13th, a small crew was started on Job 54, cleanup, and 33 man-days have been used pulling nails from old lumber and cleaning up some of the materials left from the pageant which, in former years, was held annually at the monument.

On the 14th, the boys started work on the caliche pit in preparation for making adobes to be used in the construction of the workshop, Job 55. The boys began manufacturing adobes the 20th, and 125 man-days have been used. Barring any hard luck in the drying process, we have enough made for the first building.

Safety instruction meetings have been held each week, as well as a class in construction.

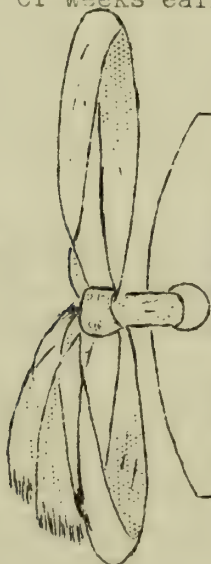
At Christmas the boys in camp enjoyed a nice turkey dinner and we appreciate the cooperation of Junior Park Naturalist Dodge for helping to make the fine menus.

*****SWM*****

The Boss is not so sure about taking over No. 13916. It is a nice new car all right but needs working in for twenty or thirty thousand miles whereas old 1803, with 80,000 miles on her clock, is loosened up and clicks and chuckles just about right when you get into a rough piece of road. 'Gene nearly ruined us by washing and waxing 1803 this month; the only way we can tell her now as we come down a block of parked cars is by the two spare wheels on the running boards.

Al comes in to add as a postscript to his report that he and I found a squaw berry bush in bloom on December 13 which seemed to us a couple of weeks early.

*****SWM*****



NOTICE OF ARRIVAL

VIA: Santa Claus - Stork Express
TO: Mr. and Mrs. Earl Jackson
ADDRESS: Montezuma Castle Nat. Mon.
ARTICLES: ONE SON
CONDITION ON ARRIVAL: Excellent

MARTIN ARVIN

TERMS: Plenty down; Lifetime to pay

HEADQUARTERS

BRANCH OF EDUCATION

The educational staff for the month of December consisted of Park Naturalist King and Junior Park Naturalist Dodge. Junior Archeologist Steen continued on his assignment to Tumacacori National Monument and was unable to perform any educational duties except visitor contact work.

King took a total of 15 days sick leave to recuperate from a nasal operation and his work during the rest of the month was limited to routine desk matters. Dodge was in charge most of the month and his report incorporates practically all of the educational activities during December.. It follows:

Museum planning

Casa Grande, 1 hr.; Bandelier, 10 hrs.; general, 1 hr.	1 $\frac{1}{2}$ days
Work in Southwestern Monuments Loan Library-----	1 day
Annual leave-----	1 day
Monthly Report-----	10 days
Correspondence (Includes opening the mail)	
Thirty-two letters written or dictated-----	1 day
Maintenance (Cleaning office and putting up oil stove)---	1 day
Filing Photographs-----	1 day
Special Reports for Washington Office-----	1 $\frac{1}{2}$ days
Conferences: with Superintendent, visiting custodians and rangers, and with interested visitors-----	1 day
Talks; preparation and delivery-----	1 day
Packing, wrapping, and shipping publicity material, in- formational folders, supplies and equipment, specimens for identification, and binding monthly reports-----	2 days
Banding Birds-----	1 day
Relief Guiding at Casa Grande-----	1 $\frac{1}{2}$ day
Taking photographs of personnel, specimens, etc.-----	1 $\frac{1}{2}$ day

With the assignment of CCC enrollee Marvin Hale to the educational office on December 17, it is hoped that much of the mimeographing and shipping henceforth will be handled by him. During the month, he put in two and one half days mimeographing and one half day wrapping and shipping supplies and equipment.

The following pieces were mimeographed during the month:

35 copies of Steenberg's Montezuma Castle article.
200 Herbarium record cards.
2,000 Casa Grande Information leaflets.

BRANCH OF EDUCATION (CONT.)

Mimeographed last month but not reported:

1,000 Aztec Ruins Information leaflets.

100 Copies of Special Report #22 (Bird Banding, 1937).

SOUTHWESTERN MONUMENTS LOAN LIBRARY

Loan and return records were kept current, but cataloguing of new books has fallen far behind. The library received the following accessions during the month: twelve books, three pamphlets, eight reprints, and 19 periodicals.

HEADQUARTERS BIRD BANDING

There follows a brief report of bird-banding operations at headquarters since activities were started late in October:

<u>Species</u>	<u>October</u>			<u>November</u>			<u>December</u>		
	<u>New</u>	<u>Rep.</u>	<u>Ret.</u>	<u>New</u>	<u>Rep.</u>	<u>Ret.</u>	<u>New</u>	<u>Rep.</u>	<u>Ret.</u>
Cactus Wren-----	0	- 1	- 3	0	- 8	- 2	0	- 2	- 0
Crissal Thrasher--	1	- 0	- 0	2	- 1	- 0	0	- 0	- 0
Gambel Quail-----	0	- 0	- 0	17	- 9	- 5	0	- 0	- 0
Gambel Sparrow----	0	- 0	- 1	10	- 7	- 6	4	-16	- 1
Gila Woodpecker---	0	- 0	- 0	0	- 0	- 0	1	- 0	- 1
House Finch-----	1	- 0	- 0	5	- 0	- 0	0	- 0	- 0
Rock Wren-----	0	- 0	- 0	0	- 0	- 0	1	- 0	- 0
Say Phoebe-----	0	- 0	- 0	0	- 0	- 1	0	- 0	- 0
W. Horned Owl-----	<u>1</u>	<u>- 0</u>	<u>- 0</u>	<u>0</u>	<u>- 0</u>	<u>- 0</u>	<u>0</u>	<u>- 0</u>	<u>- 0</u>
Total-----	3	- 1	- 4	34	-25	- 14	6	-18	- 2

Total birds handled in this period: 107.

TALKS OUTSIDE OF MONUMENT

December 1: fifteen minute talk over radio station KOY in Phoenix.

December 1: illustrated evening talk at the Arizona Museum in Phoenix. Attended by approximately 50 people.

December 16: fifteen minute illustrated talk to the Coolidge Masonic Lodge attended by approximately 35 people.

*****SWM*****

VISITOR INFORMATION

By the Boss

As nearly as we could check our visitors for the month of December, we had 11,503 of them as against 13,021 for the same month last year. The drop shown is more apparent than real, due in part to a sharp change in the figures at White Sands where we now have a permanent man working with the visitors. I think the figures at White Sands are too low for this month, but we will be able to get a closer check in the next month or two as we fall into the routine of the work over there.

SOUTHWESTERN MONUMENTS

MONUMENT	EMPLOYEES		FIELD TRIPS				MUSEUM TALKS				Unattended Con-	Total Inform- ational Contact	Total Travel	Per cent Con- tact
	Per.	Temp	No.	Att'd Time	Av. Att'd Time	Av.	No.	Att'd Time	Av. Att'd Time	Av.				
Arches	1 P.	---	---	---	---	---	---	---	---	---	50	---	50	---
Aztec Ruins	1.5	---	97	410	2575	4.2	102	399	2090	3.9	110	809	503	160
Bandelier	1	3 CCC	29	95	2175	3.2	28	95	475	3.5	408	283	263	107
Canyon de Chelly	1	---	3	4	450	1.25	---	---	---	---	---	4	4	---
Capulin Mountain	1 P.	---	---	---	---	---	---	---	---	---	300	---	300	---
Casa Grande	2	3 CCC	537	2584	16669	4.8	451	2118	9500	4.6	142	4702	2931	160
Chaco Canyon	1	---	---	---	---	---	---	---	---	---	87	---	87	---
Chiricahua	1	2 CCC	19	83	1147	4.3	---	---	---	---	182	83	265	---
El Morro	1	---	14	50	965	3.5	---	---	---	---	16	57	73	---
Gila Cliff	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Gran Quivira	1	---	36	173	1764	4.8	---	---	---	---	26	173	199	---
Hovenweep	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Montezuma Castle	2	---	106	318	4173	3.0	90	278	1485	3.97	213	536	403	147
Natural Bridges	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Navajo	1	---	1	2	120	2.0	---	---	---	---	---	2	2	---
Organ Pipe	---	---	---	---	---	---	---	---	---	---	700	---	700	---
Pipe Spring	1	---	11	30	325	2.7	---	---	---	---	114	28	142	---
Rainbow	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Saguaro	---	---	---	---	---	---	---	---	---	---	2000	---	2000	---
Sunset Crater	---	---	---	---	---	---	---	---	---	---	200	---	200	---
Tonto	1	---	42	125	2105	2.8	38	129	522	3.4	231	254	360	---
Tumacacori	1	---	144	619	4029	4.2	13	51	190	3.9	227	670	846	79
Walnut	1	---	15	48	415	3.2	53	157	1175	3.0	101	207	270	76
White Sands	1	---	---	---	---	---	---	---	---	---	1830	---	1830	---
Wupatki	---	---	---	---	---	---	---	---	---	---	75	---	75	---
Yucca House	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	22	8	1054	4539	37012	4.3	775	3227	15437	4.1	7012	7968	11503	68
Last Month	22	8	1097	5643	44374	5.1	722	3478	13227	4.8	11546	9033	17795	50.7
December, 1936	---	---	1019	6061	41106	5.9	464	2902	8856	6.2	---	3963	13021	68

VISITOR STATISTICS (CONT.)

A check of these statistics with the same month last year convinces me that we are not having quite so many visitors as we did last year; that we handled them in smaller parties; and, we reached the same percentage, 68, of our visitors with our informational contacts. In the 11,503 visitors we made 7,868 contacts, and that means we missed reaching a lot of visitors.

We gave 1,054 guided field trips to 4,539 visitors, the average field party consisting of 4.3 persons and the time of the field trip being 35.1 minutes. This is an increase in number of trips over last year to a considerable decrease in number of visitors.

We gave 775 museum talks to 3,227 visitors; an increase over the 464 talks last year to 2,902 visitors. The sharp increase here comes at Casa Grande, where we spent nearly three times as much time in museum talks as we did last year, and is partly due to the fact that Bandelier, Tumacacori, and Walnut Canyon were not reporting last year.

I have been pointing out for the last couple of years that the size of the museum doesn't seem to affect the time the visitor interest can be maintained. This past month we have been doing a little experimenting at Casa Grande, where we **are** having to use some new guides. The following figures were compiled concerning guide No. 1.

Guide 1 ran 87 field trips for a total of 2,437 minutes, or an average time per party of 28 minutes. We then had a check-up and talked things over with the guides and Guide 1 then went out and ran 56 field parties for a total of 1,906 minutes, or an average per party of 34 minutes. He lengthened his party time six minutes by having his interest aroused. As a check on field time for this same month, a man who has been with us for some time ran 33 parties for a total of 1,206 minutes, or an average of 36.5 minutes. Another man who had been with us some time ran 32 field parties for a total of 1,042 minutes, an average of 32.5 minutes. Guide 1, a green youngster, with a little less than a high school education and less than a month of training, plumps his field party time, after having his interest aroused, right in between two old hands: what is the answer? Coincidence?

Guide 1 also ran a series of 76 museum talks for a total of 1276 minutes, or an average of 16.7 minutes per party. We then had the check-up and talked things over and he went out and ran 39 museum talks for a total of 860 minutes, or 22 minutes per party; 4.3 minutes added by arousing his interest. As a check against this, Old Hand No. 1 ran 19 talks to a total of 445 minutes, or an average of 23.4 minutes, and Old Hand No. 2 ran 22 museum talks to a total of 349 minutes, or an average of 15.8 minutes. Here again the green man, with his interest aroused, plumped his museum talk time between that of the two Old

VISITOR STATISTICS (CONT.)

Hands and just a little below the higher man. Again, what is the answer? Coincidence?

*****SWM*****

MOBILE UNIT

By Gordon Vivian, foreman,
Chaco Canyon, New Mexico.

Once when Dale was here he said that he'd sometime like to know exactly what has happened on the wall repair; amounts, man days, etc. The following figures were taken from the individual job reports and measurements on the work:

	<u>Repair</u> (Sq. yards.)	<u>Repointed</u> (Sq. yards)	<u>Man Days</u>
Kiva J - - - - -	14 - - - - -	6 - - - - -	37
Kiva E - - - - -	4 - - - - -	6 - - - - -	13
Kiva I - - - - -	7 - - - - -	- - - - -	4
Kiva H - - - - -	10 - - - - -	2 - - - - -	12
Kiva C - - - - -	49 - - - - -	- - - - -	69
Kiva K - - - - -	5 - - - - -	4 - - - - -	15
Kiva D (exterior) - - -	21 - - - - -	- - - - -	40
Room 263 (N) - - - - -	24 (cubic yards) - - - - -	- - - - -	85
Room 163 (S) - - - - -	4 - - - - -	5 - - - - -	15
Room 268 (N) - - - - -	3 - - - - -	2 - - - - -	9
Kiva D (interior) - - -	38 - - - - -	- - - - -	52
Kiva D (exterior) - - -	1 - - - - -	- - - - -	3
Kiva E (exterior) - - -	14 (cubic yards) - - - - -	- - - - -	50
Kiva I (exterior) - - -	3 - - - - -	- - - - -	12

All this adds up to 431 man days and 41 cubic yards of masonry, 160 square yards of veneer replaced, and 15 yards repointed. In getting a square yard of surface finished, we find that benches and bench tops are the quickest, repointing is next, replacement of veneer third, and building up the entire wall last. Now, by averaging these speeds and the amount of surface finished, I come somehow to the conclusion that it takes an average of one and eight-tenths man days to finish a square yard of wall whatever kind of work is done on it.

This includes all repair labor overhead, hunting up the rock and hauling it to the job, sorting and carrying the rock, hauling, and adobe, mixing mortar, and erecting scaffolds. It does not include any camp overhead.

The figures on the capping done so far are as follows:

	<u>Square yards</u>	<u>Man Days</u>
Kiva K - - - - -	16 - - - - -	19
Kiva D* - - - - -	33 - - - - -	26

MOBILE UNIT (CONT.)

	<u>square yards</u>	<u>man days</u>
Kiva C*- - - - -	31 - - - - -	21 - - - - -
Area 235 - - - - -	7 - - - - -	13 - - - - -
Area 239 - - - - -	6 - - - - -	12 - - - - -
Rooms 163-164- - - - -	13 - - - - -	17 - - - - -
Room 289 (N) - - - - -	2 - - - - -	5 - - - - -
Kiva I (W) - - - - -	14 - - - - -	21 - - - - -
Kiva I (outside) - - - - -	3 - - - - -	7 - - - - -
Area 166-167 - - - - -	7 - - - - -	11 - - - - -
Area 282-283 - - - - -	41 - - - - -	44 - - - - -
Rooms 157-158- - - - -	3** - - - - -	12 - - - - -

* Base laid in single course but capping not yet completed.

**Unfinished.

This 176 yards of capping in 206 man days or one and seventeen hundredths man days per yard. It's not much faster than the wall repair but here we had to back up several times and do walls over again. I might add here that it takes between three quarters of a gallon and a gallon of Bitudobe to do a yard of capping.

It is still difficult to get the idea of this capping across to the boys. I explain and point and build up a section of the wall (not a very big one) to illustrate what I want. After I've built up a piece they say, sure, they understand now what it is all about and go ahead. And it all comes out like the small section, all the walls in the room higher on the outer edge than on the inside, and every fourth rock cocked off a little to one side and the fifth rock a great big one and the seventh and eighth rocks held back from the edge three quarters of an inch, and so on around the room in series a couple of feet long. Doing this suits them all right and they'd just as soon do it this way as any other once they've learned the formula, but after it's gone on for a few feet and I want to change it, they naturally think that I don't know what I do want and the best thing to do is to just lay it all flat like a pavement.

From time to time we take a sample of the mix and, after drying, test it for water absorption. The only way we can test it here is visually. To all appearances, the water absorption is less than the laboratory tests on the mix indicate that they would be with our soil.

Wishing to test some mortar that had been exposed to weathering and freezing, I took two samples from Kiva K which has now been completed about a month. Sample #1 was a small sliver of mortar about one quarter inch thick from between two surface stones. Sample #2 came from the center of the wall; it was irregularly shaped and the size of a large potato. Both were placed in a pan containing water. Number one, the small sliver, became entirely damp in eight to ten hours but remained firm to the touch.

MOBILE UNIT (CONT.)

After 48 hours in the water, the larger piece had absorbed moisture to a level of half an inch above the water but no disintegration had taken place below the water line. All above the moisture line remained dry and with its original strength.

A piece of original, or aboriginal, mortar of the same size taken from a wall being repaired melted down completely within 20 minutes.

Freezing weather is retarding the laying of the capping somewhat. For three days in which there were freezing temperatures most of the working day, we laid no stabilized mortar at all. The rest of the time the mix is kept as dry as possible and work on the capping is stopped at three o'clock and all work done that day covered with a heavy layer of earth.

Dale will probably not like to hear this, but we have not laid any of his concrete walk yet. As Mac said, "If you lay it now it will freeze, and if it freezes, it's no good." Two other jobs in the canyon have been laying concrete in this weather. On one job it entirely disintegrated when the forms were taken off, and on the other, the boss stands out there all day keeping burning gasoline on the surface of all new work. When it's laid on top of a wall, as all ours will be, the top can be covered with straw or what have you, but not the sides. To cover a second story wall with enough canvas so that charcoal burners could be safely used under it would require a couple of circus tents.

We've cleaned out several inches of wind-blown fill in Kivas D, J, and I, and exposed the floor features there. In addition to the usual shaft and circular fire pits, J and I were built over other structures whose wall tops now show at the floor level of these kivas. In D, the top of a slightly smaller kiva almost concentric with D appears.

Since I didn't get a copy of the October report in which Mac told a joke on me, I went right ahead and told the same joke in my November report. Perhaps I should always start my reports with, "Stop reading if you've heard this one before." Anyway, I'll take another chance and hope that no one has told this illustration of how well my boys can follow any routine. It goes like this.

When starting out to take some "Before" pictures of some broken concrete capping, I had one of the Navajos sweep all the loose dirt off it before taking the picture. The picture was then taken and the same Navajo told to take the broken capping off the wall. Then yesterday this selfsame Navajo was told to take the capping off another section of wall that had been photographed some weeks before. He started off and no more attention was paid to him. Then in about a half an hour he was seen to be vigorously sweeping the capping to be removed. This looked like something new, so I watched him. In a couple of

MOBILE UNIT (CONT.)

minutes the sweeping was finished. He looked proudly at the clean concrete surface, flecked off a speck of dust or two, then reached for a pick and began to pry up the broken slabs.

*****SWM*****

Gordon has a good report here and the figures on his repairs are most interesting. I was particularly interested in his report on the quality of the mortar he is using because, being a sort of conservative die-hard, I haven't taken much stock in this bitudobe which is coming into use in this country. Strange as it may seem, I am happy to say it looks like I am going to get caught on the wrong side of another argument.--F. P.

*****SWM*****

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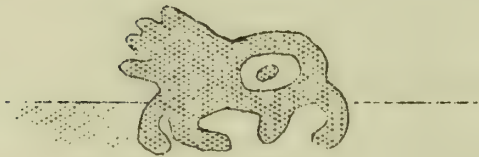
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GEOLOGICAL REPORT ON NATURAL BRIDGES NATIONAL MONUMENT

By Charles N. Gould

Natural Bridges National Monument is located in San Juan County, Utah, about 50 miles west of the State of Colorado, and nearly the same distance north of Arizona. The location of the monument and its relation to other National Parks and National Monuments in the Southwest is shown on the map of the Indian Country.

The monument is situated about 50 miles west of Blanding, Utah, from which place it is reached by a graded road. The trip may be made by automobile in two hours. Blanding can best be reached from the north over U. S. Highway 450 (marked 160 on the Indian Country map) from Moab to Monticello. From the Mesa Verde country and Durango, Colorado, the same road, U. S. Highway 450, is followed. From Monticello to Blanding, State Highway 47 is used. South from Blanding, State Highway 47 leads south to Bluff, Utah, and thence into Arizona, crossing Monument Valley via Kayenta, to Grand Canyon and Flagstaff.

On June 11 and 12, 1937, accompanied by Chief, Naturalist Division, Trager, and Associate Geologist Vandiver, I made an inspection of Natural Bridges. We were met at Blanding and conducted to the Monument by Custodian Zeke Johnson who has been connected with the monument for the past 23 years.

The first white man to see Natural Bridges was probably W. C. McLoyd who explored White Canyon in 1892. Later, James A. Scorup brought them to the attention of the public.

In the spring of 1905, Mr. H. A. Culver, artist of the Salt Lake Commercial Club and member of the Board of the Utah Art Institute, accompanied by Scorup, S. T. Whitaker, and Carlton Holmes, made a pack-train trip into southeastern Utah, visiting the bridges. The pack train which included 8 men with 20 horses, outfitted at Bluff, Utah, on April 9. The party reached Little Bridge, now called Owachemo Bridge, April 13 and remained in the vicinity of these bridges until April 18, then returned to Bluff on April 23.

Mr. Culver's diary was published as a supplement to Southwestern Monuments monthly report for June, 1937.

In 1908, three years after the Culver expedition, Natural Bridges National Monument was set aside by proclamation of President Theodore

GEOLOGICAL REPORT ON NATURAL BRIDGES NATIONAL MONUMENT, UTAH (CONT.)

Roosevelt to preserve the three natural bridges formed by water and wind erosion from heavy beds of sandstone.

I have not been able to secure an accurate map showing the boundaries of the monument. So far as I can learn, no accurate survey of the monument area has been made. The official blue print map was supplied by the Chief Engineer's Office at San Francisco.

The area of the monument also seems to be a matter of doubt. Zeke Johnson, the Custodian, told us that the monument contained approximately 4700 acres, but in the pamphlet entitled "Information Tables of Areas Administered by the National Park Service", edition of July 31, 1935, the area (estimated) is given as 2700 acres.

The Natural Bridges, as will be narrated later, officially named Kachina, Owachomo, and Sipapu, are arranged in a triangle, with three miles on each side. The road from Blanding ends at Johnson's camp, which is near the Owachomo Bridge. The other two bridges must be reached on foot, entailing a nine-mile walk along rough trails over rock and through sand.

Natural Bridges National Monument is located in one of the roughest and most picturesque parts of the state of Utah. This part of the State abounds in steep cliffs, lofty mesas, high mountains, and deep canyons. The drainage of the Monument is into Colorado River, through White Canyon, which is spanned by Kachina and Sipapu bridges. Owachomo Bridge is situated on Edwin Canyon, a small branch of Armstrong Canyon, three miles above the junction of Armstrong and White Canyons, at which place Kachina is located.

These canyons have been carved by erosion to a depth of 600 feet into massive sandstone which forms a flat plateau covering many hundreds of square miles. Above this plateau several mesas and peaks rise, sometimes to a height of 1500 feet. The total relief on or near Natural Bridges National Monument is approximately 2500 feet. The highest points in this part of Utah are Mossback Mesa to the west, and The Bears Ears, two peaks northeast of the monument on the Blanding Road.

The canyon walls are usually precipitous with many overhanging cliffs and long, narrow shelves (as may be seen in figures 2 and 3)*. The streams have cut a winding, tortuous, meandering course across the heavy sandstone plateau, and these meanders have become entrenched to a depth of several hundred feet. The few trails leading into these canyons are difficult of descent. The traveler must follow switchbacks, descent ladders, find his way along rock shelves, and following red arrows painted on the rocks by Custodian Johnson.

The geology in this part of Utah is all on a massive scale. The
*Original report

heavy, gray sandstone into which the canyons have been cut by stream erosion was described in some of the early reports as the Navajo sandstone, of Jurassic age, which it resembles in many ways. But, according to our latest and best information, this sandstone is of Permian age, not Jurassic, and is classified as the Cedar Mesa sandstone, a member of the Cutler formation. The thickness of the Cedar Mesa in this area is probably more than 600 feet. For description of the sandstone, reference is made to Bulletin 841, U. S. Geological Survey, by A. A. Baker, entitled "Oil Possibilities of the Moab District, Utah", Pages 32, 33. Also to Bulletin 865, U. S. Geological Survey, also by Baker, "Geology of the Monument Valley - Navajo Mountain Region, etc.", pages 31, 32.

The Cedar Mesa sandstone as exposed in the vicinity of Natural Bridges National Monument consists of many layers or beds, of heavy, crossbedded, gray sandstone, separated by thin beds of red or maroon clay. The thickness of the sandstone beds varies from 10 feet to 50 feet, while the red clays are from a few inches up to two or three feet thick. The weathering of these alternating beds of sandstone and clay gives rise to a series of long, narrow shelves with overhanging walls. In many places this unequal erosion has produced a stair-step effect along the canyon walls. These characteristics may be noted in practically all photographs used in illustrating this report.

Lying above the gray Cedar Mesa sandstone is a series of red or maroon-colored shales and sandstones, 1000 feet or more in thickness, which form the slopes of the higher mesas. Further north in the Moab region this is known as the Bogus tongue of the Cutler Formation. It may be the equivalent of the Organ Rock, member of the Cutler formation, as exposed in the Monument Valley, farther south. The age is Permian. Next in ascending order is a gray sandstone which was formerly correlated with the Kaibab limestone, but which is now thought to be the equivalent of the de Chelly sandstone. Next follows another maroon-colored formation, several hundred feet thick, exposed on the slopes of Mossback Mesa and the Bears Ears, the two highest peaks in the region. This may be correlated with the Moenkopi formation of Triassic Age.

The names and dimensions of the three natural bridges, as given us by Custodian Johnson, at the time when he conducted us to these bridges, are as follows:

Owachomo Bridge (Formerly called the Edwin Bridge in honor of Edwin F. Holmes. This name was given by the Culver party in 1905.)

From the Indian name O-wa-co-ma, meaning "Mound on Top", from the cone-shaped mound of sandstone standing on top of the bridge. The dimensions of Owachomo Bridge are:

GEOLOGICAL REPORT ON NATURAL BRIDGES NATIONAL MONUMENT, UTAH (CONT.)

Span	200 feet	Height	108 feet
Width	35 feet	Thickness	10 feet

Sipapu Bridge (Formerly called the Augusta Bridge, probably for the mother of H. A. Culver.)

Called by the Indians "Si-pa-pu" meaning "Portal of Life" or "Place from Which the Spirit Comes". According to their legend, this was the entrance into the underground world from which the spirit emerges at birth to enter the human body, and to which it returns after death. The dimensions of the Sipapu Bridge are:

Span	261 feet	Height	222 feet
Width	40 feet	Thickness	50 feet

In many ways Sipapu is the most impressive of the three bridges. The gigantic span of gray sandstone archway over the deep canyon forms a sight never to be forgotten. Figures 10, 11, and 12 show different views of this arch.*

Kachina Bridge (Formerly called the Caroline Bridge, for the mother of James A. Scorup.)

It spans White Canyon at the mouth of Armstrong Canyon. The Indian name is "Ka-Chi-na", meaning dancing girls, so named from a series of petroglyphs carved on the face of the cliff just above the bridge. The dimensions are:

Span	186 feet	Height	208 feet
Width	50 feet	Thickness	108 feet

Kachina is the most massive of the three bridges. *Figures 13 and 14 show views of the bridge. Unfortunately, it was not possible in the limited time at our disposal to secure good pictures of either Sipapu or Kachina Bridges.

Natural Bridges Monument has considerable archeological interest. There are scores of cliff dwellings, usually tucked away out of view along one of the shelves in the walls of the various canyons. These belong to the Mesa Verde type of structure, being built of flat blocks of gray sandstone laid in adobe mortar. Much broken pottery may be found. A description of these ruins is included in an article by C. R. Steen, Junior Park Archeologist, entitled, "Archeological Investigations at Natural Bridges National Monument", published as the supplement to Southwestern Monuments Monthly Report for May, 1937.

The most abundant trees on the monument are pinon and juniper, sparse
*See original report.

GEOLOGICAL REPORT ON NATURAL BRIDGES NATIONAL MONUMENT, UTAH (CONT.)

growths of which cover the slopes and mesas. Cottonwood and a few other deciduous trees occur in the bottom of White and Armstrong Canyons. Typical tree growth may be noted in any of the illustrations.*

Each year, Natural Bridges Monument is becoming more popular. Formerly a three-day plus train trip from Blanding was necessary, but since the completion of the graded road to Johnson's camp, the monument is much more easy of access. During 1936 there were, according to Johnson, about 1000 visitors.

At the present time, two most pressing problems at Natural Bridges National Monument are adequate quarters for the custodian, and a permanent water supply. Mr. Johnson lives in a tent, personally owned. Recently the Government has supplied a second tent for visitors. These two tents are shown in figure 1*. Plans are under way for the erection of a permanent residence.

All the water for camp use must either be hauled from a spring 12 miles distant, or carried in buckets up a steep winding trail for nearly a quarter of a mile from water holes in the bottom of Armstrong Canyon.

My brief studies would lead me to believe that there are four possible sources for a permanent water supply for the headquarters:

1. Water pumped from water holes in the bottom of Armstrong Canyon. This will entail a lift of plus or minus 300 feet. This on the assumption that the permanent headquarters is located at Johnson's present camp.
2. Water carried by gravity in a pipe line from a spring 12 miles distant.
3. Water from collected roofs of buildings, not yet constructed, and conserved in a cistern blasted in the sandstone.
4. Flood water from a ravine conserved in rock cisterns..

Numbers 3 and 4 might be combined. Custodian Johnson favors Plan No. 4. He suggests the building of a small dam across a ravine to divert water into a cistern blasted in sandstone and lined with concrete.

As a supplement to this Report, I am appending a memorandum, submitted to Regional Officer Maier, dealing with the Arch Valley area near Blanding, Utah.

*See original report

*****SWM*****

STABILIZATION OF TALUS HOUSE

By J. W. Hendron

During the year 1920, while Bandelier National Monument was under the administration of the United States Forest Service, the School of American Research resumed field work in the Rito de los Frijoles in cooperation with the Forest Service. This piece of field work was the restoration in part of the Talus Village, called the House of the Sun People, which was excavated by the School in 1909.*

Even in those days a large number of tourists visited the ruins at Bandelier, and it was thought that even with the aid of pamphlets that had been published with restorations on paper of typical ruin groups, it had not been possible to convey a satisfactory picture of these ancient settlements to people of average information on such subjects. It was therefore decided to select a typical village and rebuild enough of it to make a convincing example of the ancient Pajaritan cliff village.

Mr. Kenneth M. Chapman, who at that time was a member of the Museum staff, and who had for twenty years been a student of the architecture and art of the region, was selected for the job. He was assisted by a number of Tewa Indians from the village of San Ildefonso in the Rio Grande Valley, who had for years past been in the employ of the School in the excavation and study of ancient ruins of Pajarito Plateau. These men had been not only students of the ancient architecture of their race, but they had experience in building important structures along the ancient lines under the auspices of the School. They assisted in the construction of the "Painted Desert" at the Panama-California Exposition, and in the building of the Art Museum in Santa Fe. Not a feature of the restoration was carried out until every remaining ruin in the canyon had been carefully studied for historic authority. The result has been a most interesting addition to the attractions of this famous region. (Hewett, Edgar L.: Official Act and Administrative Reports of the School of American Research, Archaeological Institute of America, Santa Fe, New Mexico, U. S. A., ns. paper No. 22, 1918-1927, p. 53-55.)

I have been fortunate enough, through the kindness of Mr. Chapman, to obtain a detailed account of the restoration and also the names of most of the Indians employed by the School at that time.

Seemingly Mr. Chapman was unable to leave Santa Fe until about two weeks after the project was agreed upon and so Wesley Bradfield was sent out ahead and employed San Ildefonso men to cut vigas and small beams and poles for roofing. He was advised not to use pine cut at that season (May) for vigas, so he selected and cut oak, and alders

* Hewett, Edgar L.: Organic Acts and Administrative Reports of the School of American Archaeology, Archaeological Institute of America, Santa Fe, New Mexico, U. S. A., ns. paper No. 6, 1907-17, p. 63.

for the other material from the floor of the canyon. Four to six men were used for several weeks gathering building stone from the talus slopes, and from the excavation of Tyuonyi. The old footing of the walls was located, partly by excavation, and partly by study of Mr. Chapman's plan published in the report of the 1909 excavations. (The Excavations at El Rito de los Frijoles in 1909, Papers of the School of American Archaeology, Archaeological Institute of America, No. 10, p. 656.) In some instances, it was necessary to cut back several inches into the weathered tuff to get satisfactory footing for the walls.

The valley soil was found to be too sandy for mud mortar, so it was mixed with clay obtained at the top of the trail, where it was exposed on a slope among the junipers, pinons and pines. The Indians packed it down in sacks on burros. This same clay was also used for interior plastering of the rooms. To get rid of leaves, sticks, roots, and coarse gravel, the clay was stirred to a consistency of cream, in buckets. The floating vegetal material was skimmed off and then the clean clay was poured off, leaving the gravel and sand. After settling, the water was poured off and the clay then used with the valley soil. For the plastering, sifted sand was used with the clay.

This reconstruction consists of five small rooms, and to enable the reader to view the situation clearly, a detailed description of the features of each room will be given. I shall number these rooms from 1 to 5.

Room 1 is to the front of the structure and forms the southeast corner. It measures 8.3 feet across the back wall on the inside, 9 feet across the front, the west wall, 5.6 feet, and the east wall, 7.1 feet. The 8 main vigas of oak were laid the width of the room. They were approximately 5 inches in diameter. Poles or vigas of alder approximately 2 inches in diameter were laid across the main vigas and nailed. It was found that these poles in some cases were flattened with an ax so that they would lay an inch or so into the end walls. Apparently strong branches were used to fill in the gaps between the poles. Over the poles was laid a thin layer of brush, pine needles, and grass. On this, 2 x 4's were spiked down edgewise at intervals to provide nailing surfaces for a 3-ply roofing material. In the space between the 2 x 4's was placed crushed tuff, 1 to 2 inches in diameter and bedded in a clay mortar and finished to the level of the 2 x 4's. Over this, when dry, the 3-ply roofing was cemented and nailed down to the 2 x 4's, and brought up as a flashing at the sides, and flashed into the rain troughs of oak. Over the flashing, the final course of building stone or parapet wall was laid in cement mortar colored to imitate the mud mortar used between the rest of the building stone. After testing the pitch of the roof to make sure that water poured on every part reached the drain troughs, the Indians laid an earth roof over the 3-ply roofing, using 2 inches of mud, and when that cracked,

threw dirt on and worked it into the cracks. This layer was carefully sifted to keep sharp objects from puncturing the sheet roofing. Afterwards, another inch or so of ordinary dry earth was thrown on.

This room has in its front wall a low doorway, enabling a person to view the inside. In the southeast corner is a grinding bin 37 inches long and 32 inches wide, its sides being of slabs of black basalt. One slab divides the bin into two parts and in each compartment is a metate of basalt set in mud, and still in the correct position for grinding. This was, of course, a reconstruction by Mr. Chapman at the time the lodge was built, and was put back in place as near as the original position could be determined. In the southwest corner is the firebox. It is approximately 19 inches square and rather indefinite, some of the stones being missing. Its construction is very simple and it seems that slabs of basalt were set edgewise so that another slab could be placed flat over them.

Above the firebox, and in the roof 68.5 inches from the floor, is a chimney or smoke hole approximately 10 inches square with a small parapet wall around it. Back of the smoke hole and not more than 15 inches towards the cliff, midway between the front and back walls is the hatchway. Four lengths of oak notched at the ends and nailed to the main vigas were used for its construction. It is a little longer than wide, and just large enough for a human being to pass through.

The walls on the inside of the room were plastered with a coating of natural colored mud, a light brown to be specific, which was followed by a fine coating of plaster 35 inches up from the floor, apparently a clay of a light burnt red color. It is not known why rooms were given a final touching-up to this height, but it was probably a measure of cleanliness; plastering the walls whenever the smoke had sufficiently blackened them.

In the northeast corner of the room is a small doorway leading through the back wall into another chamber which I shall refer to as room No. 2. Two slabs of basalt set in a low protrusion of the cliff were used as steps leading up to the doorway 40 inches above the floor of room No. 1. In the bottom of the entrance was set a slab of polished black basalt. The entrance is barely large enough to crawl through.

Room 2 lies directly in back of room 1, and is a good example of a terraced room. It seems that in some instances rooms nearer the cliff were built on rising levels. The chamber is almost square, the inside measurement of the front wall being 7.7 feet, the same for the back wall; the east wall, 6.8 feet; and the west wall, 6.1 feet. The roof consists of 6 main vigas of approximately the same diameter as the vigas of the room previously mentioned, and the roof construction is the same as room No. 1. There was no smoke hole in the roof, but there was a central opening which was nearly in the center of the room near

the northwest wall and constructed almost identical to that of room No. 1, and very little larger. From the floor to the ceiling, the room measures 72 inches and its walls are plastered in the same manner as the room in front of it.

In the center of the back wall is a small doorway with a slab of basalt set in the bottom 13 inches above the floor of room No. 2, leading into a shaft partly cut out of the cliff. The shaft measures 24 inches from the wall to the cliff, and 39 inches from the floor to its roof consisting of small poles of alder approximately 2 inches in diameter. The roof of room No. 2 extends over this covering and 15 inches above it. Four of the main vigas of room No. 2 were mudded into post holes cut in the cliff, and extended over the sides of the shaft, while two other vigas extended just through the wall which separated the shaft from the room in front. Along side these two main vigas were laid short lengths of pine about 55 inches long, extending over the shaft to post holes in the cliff. The shaft is barely large enough for an individual to sit in. Its use is unknown, but it is thought to have been a receptacle of some sort. Parts of its sides are laid up with chunks of tuff almost to the main vigas of room No. 2. I discussed the matter of the shaft with Mr. Chapman and learned that roofing material would soon rot, probably because of the lack of air.

Room No. 3 is the northwest room of the lodge and joins room No. 1 on the west. A low entrance way is in the front wall on the southwest side opening into the small chamber. Its inside measurements are as follows: southwest wall, 10.3 feet; northeast wall, 10 feet; northwest wall, 3.9 feet; and the southeast wall, 6.2 feet. The back wall curves toward the inside of the room and is laid upon a large flat protrusion of tuff, a natural formation which seems to serve as sort of a bench extending 7.5 inches above the floor of the room. Near the southeast wall there is a carved out portion which is just large enough for a person to sit down in.

The height of the room is 5.9 feet from the floor to the ceiling which was constructed in the same manner as the other two rooms mentioned. There were six main vigas in all. No central opening was found in this roof and there was no doorway leading into the room in back of it. In the middle of the back wall and almost down to the ridge of tuff was a small opening, which appeared to be for cleaning out the adjoining room or for handing objects from one room to the other.

Room No. 4 lies directly in back of room No. 3 and is built next to the cliff. The inside measurement of the back wall is 7.6 feet; the front wall, 8.3 feet; the northwest wall, 7 feet; and the southeast wall, 6.8 feet. From the floor to the ceiling it measures 6.5 feet. The roof is constructed almost identical to the others except that split pieces of timber, apparently pine, were used in some places instead of poles of alder. There were four large vigas of oak. The entrance is through the

top almost in the center of the room between the second and third vigas and its size varies little from the hatchways of the other two rooms.

Directly in back of room No. 4 is room No. 5. It is entirely separated from the other rooms of the lodge and has to be entered by first ascending to the roof of room No. 4, and going through a low doorway in the front wall. The front or southwest wall and a small part of the northwest wall are the only ones built in this particular case, the other walls being formed by the cliff. The front wall measures 8.9 feet on the inside. The distance from the doorway in the front wall to the back of the room is 9 feet. From its floor to the roof it is 6.4 feet, and the construction is the same as the other four rooms, with the exception that the vigas or poles were placed about three inches apart, and covered by small branches, which appeared to be willows, placed very close together. There were 5 main vigas of oak, the floor is on about the same level as the roof of room No. 4, which is directly in front of it, and its walls plastered in the same manner. In the southeast corner were found slabs of black basalt which apparently form the fire box, the smoke hole being in the corner of the front wall just below the roof.

In each one of the rooms was a small rain trough placed in some portion of the roof. Three of the original troughs were still in place, the others had disappeared.

According to Mr. Chapman, except for the interior plastering, done by Tonita Roybal and Ana Montoya, no attempt was made to finish the interiors of the rooms, the main item in this regard probably being the plastering of the floors and blackened with soot. As near as can be determined, Indians employed other than those previously mentioned were Julian Martinez, Sotero Montoya, Juan Cruz Roybal, and Dionicio Sanchez.

The crew worked until August when the little house was finished.

THE STABILIZATION

Upon examination, this reconstruction was found to be in a deplorable condition. Most of the mud had been washed from the tar paper roofing which had rotted in the case of each room, and the thick coating of mud underneath the paper had washed away in places, laying the wood structure bare. The only parts stable at all were the large vigas cut from oaks and they too had begun to rot where the alder poles came in contact with them. In each of the five little rooms, a good portion of the plaster on the inside walls had been washed down and the mortar between some of the building blocks was completely out, in fact, so badly that the cracks were large enough to be seen through.

The southeast corner of room No. 1 had evidently sunk, leaving a gap in the side wall where it is joined on to room No. 2, the wall being so loose that it could be moved back and forth with one hand. The cause

of this cracking is not known, but it is thought to be the result of the wall being built on a slope and giving a little with each year's moisture or because of constant pressure on the roof. Excess weight on such frail structures would undoubtedly weaken them and lessen the length of their standing. I dare not attempt to estimate how long this room might have remained intact.

Before stabilization of the other four rooms could begin, it was necessary to cement or to repair this gap in the wall of room No. 1. The joints which had come loose were scraped free of all old mortar that could be reached, and cement was run down through the crack and forced in from the sides. Had the reconstruction of this section of dwellings continued, another room would have been joined on to the southeast side. The old viga holes are still present in the cliff wall for the first story and the outline of the room can still be seen, and even some of the original plaster remains on the cliff. A low wall not more than 5 feet high was built out from the lodge in a place where another wall might have been built by the original inhabitants. It so happened that the break occurred in line with this reconstructed wall. It was somewhat different from the building of an ordinary wall of a room, being that it was sunk into the ground about 15 inches and set in cement. It has rough edges resembling a portion of a wall of another room that had remained standing. This is the only way I know of that room No. 1 could be made stable without reconstructing the entire side.

As the old roofs of the rooms were being removed, the front walls had to be torn down to the level of the main vigas to facilitate their removal since they were mudded fast in the back walls. Most of the building stones in the upper portion of the rooms were loose and had to be reset regardless.

The new vigas, which were of pine, were set in the exact position of the old ones and were cemented in both the front and back walls. In setting the ends in the back walls, they had to be forced in small holes from which the old vigas were removed. Cement mortar was forced around the outside and small chunks or wedges of tuff were driven in to hold them tight. The building stones were then laid in to hold the ends of the vigas in the front walls.

Vigatas or poles of pine approximately two inches in diameter were laid side by side across the vigas, the ends being flattened on the under side so that they could rest or lap over the side walls thus giving more strength to the roofs at the ends of the rooms. The poles were nailed to each main viga. Although small branches were found laid over the cross poles only in one room it was thought better to use this method clear through, since a much stronger and tighter roof is produced. Willows were nailed across the vigas with the ends as close to the walls as possible.

Another layer of building blocks was then put around the wall, building it up in order to lay the balance of the roofing material consisting of grass and some brush laid to a depth of approximately three inches. Dimension lumber, 2 x 4's were nailed down edgewise, the long way of the rooms, into the main vigas, and just far enough apart so that a width of tar paper would reach from one 2 x 4 to the other. They were cut so that drainage would be to the middle of the rooms. Small chunks of volcanic ash were laid in the grass and a thick coating of mud was poured over the top even with the 2 x 4's.

After the mud had dried, it was mopped over with hot tar, and before it had completely cooled, the tar paper was laid so that its edges would rest upon the walls. The paper was forced into the back walls about two inches, that is, forced back into the even joints between the building stones of the back walls where the mortar had been scraped out. The edges of the paper where they overlap were sealed with hot tar and when it had cooled, another coating was mopped over.

The next step was the laying of the parapet wall. In the preceding paragraph, I mentioned that the tar paper was laid so that its edges would extend into the walls. In laying the building stones over it, they were set in cement over the paper and a flashing of cement was brought down from the wall to the paper on the inside.

While cleaning the five rooms on the inside, and removing the old roofing material, a great amount of tuff, small pieces of wood, twigs, and small pieces of volcanic ash had accumulated around the sides of the building. This material was used for mud which was poured over the final coating of tar to a depth of about 2 inches.

New drain troughs were cut for every room and placed in the lowest point in the roof. They were put down on top of the coating of grass and nailed to the vigas. Flashings of tin were put over the ends which rested on the roofs, the balance of the roofing materials being laid over this flashing.

In the case of the hatchways through the roofs of which there were three, the tar paper was cut and tacked to the frames, the edges of the paper then being sealed with hot tar. Each was made invisible when the job was completed.

The inside walls were plastered first with a coating of natural colored mud, and then the lower 35 inches was gone over with an orange colored clay, a deposit of this material being found in a small recess in the cliff. The exact reason why the walls were plastered with a coating of clay 35 inches up from the floor is unknown, but this same condition can be seen in most of the cave rooms. It may have been a measure of cleanliness, that is, as soon as the smoke from the fire moved down and blackened the lower part of the walls, they were

replastered. How often this replastering took place is not known and it was probably different in the case of each room, dependent upon the amount of smoke formed in each room. The walls of one room may have been smoked in a very short time while in another room fires may not have been built so often.

This completes the stabilization of the reconstructed talus house and although it is in excellent shape at the present time, a few years of weathering will leave its mark. Three entrances in the front walls of the rooms and three hatchways in the roofs leave the little house subject to climatic effects on the inside. I noticed in the case of room No. 1 that the hatchway was on the extreme end almost even with the side wall, and the rain dripping from the framework of the entrance had to run down the wall and washed away a wide strip of the plastering, and at the same time much of the mortar from between the building blocks had also washed down. This not only suggests but proves that some attention should be given the structure at least once a year. In this way, it will hold up for some years to come and with very little expense other than material, most of which can be obtained locally.

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LIBRARY LIST

There follows the continued accession list of the Southwestern Monuments Loan Library, printed here so that the field men may obtain a rough idea of the library's contents. The October, 1936, Supplement carried the list through number 586; the September, 1937, Supplement brought it up to number 865 from which it is here continued.

- 856 - Hopi Katchinas Drawn by Native Artists. Extract from the 21st. Annual Report of the BAE of the Smithsonian Institution.
- 857 - Designs of Prehistoric Hopi Pottery, Extract from the 33rd. Annual Report of the BAE of the Smithsonian Institution.
- 858-859 - Outline of the Geology and Paleontology of Scotts Bluff National Monument and the Adjacent Region. By W. L. Effinger.
- 860-862 - Historical Background for the Rocky Mountain National Park, Colorado. By H. E. Rensch.
- 863-865 - Ethnology of Rocky Mountain National Park: the Ute and Arapaho. R. L. Beals.
- 866 - Mount Rainier: Its Human History Associations. By H. E. Rensch.
- 867 - Indian Tribes of Sequoia National Park Region. By J. H. Steward.
- 868 - Standards of Pottery Description. Occasional Contributions from

LIBRARY LIST (CONT.)

the Museum of Anthropology of the University of Michigan, No. 3.

- 869 - Report of the Charles L. Bernheimer Expeditions, 1922 - 1930.
By C. L. Bernheimer.
- 870 - Discovery of the Seven Cities of Cibola. By Marcos de Niza, Fray.
- 871 - A Method for Designation of Cultures and Their Variations. By
Mrs. Winifred Gladwin and H. S. Gladwin.
- 872 - The Sources and Authenticity of the History of the Ancient Mex-
icans. By Paul Radin.
- 873 - The Preservation of Antiquities. By H. J. Plenderleith.
- 874 - Historic House Museums. By L. V. Coleman.
- 875 - Problems of Installation in Museums of Art. By A. W. Melton.
- 876 - Birds of New Mexico. By Mrs. F. A. M. Bailey.
- 877 - The Ethnobotanical Laboratory at the University of Michigan. By
M. R. Gilmore.
- 878 - The Art and Technique of Ceramics. Brooklyn Museum, Brooklyn, New
York.
- 879 - Tribal Distribution in Oregon. By J. V. Berreman.
- 880 - Guide to materials for the History of the United States in the
Principal Archives of Mexico. By H. E. Bolton.
- 881 - 887 - Birds of the Papago Saguaro National Monument and the
Neighboring Region, Arizona. By H. S. Swarth.
- 888 - The Hawks of North America. By J. B. May.
- 889 - Life History of the Gambel Quail in Arizona. By D. M. Corsuch.
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RUMINATIONS

The Boss has what he thinks is a new idea and thus far hasn't made first base with it.

We around headquarters are knee deep in museum arguments again. It looks like museums and changes in the uniform are always good for an argument around this place, no two persons being able to agree on either.

In reading the current report of the Secretary of the Interior, which came in the other day, I was impressed with the following statement concerning museums: "Planned to illustrate ideas rather than exhibit collections of specimens, they tell a running story of the parks through pictures, charts, maps, models, and dioramas arranged in narrative sequence."

That same day we had been talking over some re-arrangement of museums and I had been studying about some lantern slides which we were proposing to make. The whole thing sort of jelled in my mind that night while I was waiting for the next tide of sleep to come in.

It works out somewhat this way in my mind: If a museum is to tell a running story with pictures, maps, charts, models, and dioramas, with a very light accent on specimens, why can't we determine ahead of time the best arrangement of a proposed museum by making up a series of lantern slides of each exhibit we have in mind and testing the proposed arrangement on enough persons to give us its definite reaction?

Suppose we decide the present arrangement of the Casa Grande museum is not very satisfactory and something ought to be done about it. Lack of ideas is the least of our troubles so almost at once we will have two or three competing plans proposed. Suppose one theory claims we have the cart before the horse two or three times and all the museum needs is a re-arrangement of the present material. Let us make up 125 lantern slides, or more if necessary, and we have our museum in our two hands with its exhibits as fluid as a deck of cards. We arrange the carts after the horses and try the talk that way until we are sure of our reaction. In some cases we find it works better and in some not so well. We cut and try, shift and change until we have the best possible arrangement of those particular exhibits which will hold visitor interest for the maximum time and at the maximum intensity. We find that we can leave out half a dozen slides without hurting the talk. We promptly remove them. Next we discover that a certain place in the development of our story needs bracing with half a dozen exhibits. We make up the slides and put them into the talk and watch our audiences for their reactions. Probably it takes three or four attempts before we get the wrinkle ironed out. Thus we cut and try, shuffle our cards, and watch the visitor reaction until we get a final run of slides which give the maximum visitor interest and tells our story the best we know how.

All of this experimenting takes months and will cost some money but that will be as nothing compared to the time and money we would

RUMINATIONS (CONT.)

expend in making the same experiments by shifting and changing and building and discarding in the actual museum rooms.

Having found by actual test of sustained visitor interest the best exhibits to show and the best sequence in which to show them, we next start turning our collection of slides back into actual three dimensional exhibits along the walls of our museum; we run some of our old exhibits back into storage, we shift others to their proper places in the museum as determined by our tests and then we fill in the blank spots with exhibits which we have already tested and know before hand will succeed.

I still think that is a blamed good idea but when I took it out and put it under the fire of criticism, I began to think, before the shouting and the tumult died, they would prove I was a chicken thief along with the other mistakes they were trying to prove on me.

The argument hinges around a bloody angle in which they maintain that "telling a running story of the parks through pictures, charts, maps, models, and dioramas arranged in narrative sequence" is a thousand miles, exhibitionistically speaking, from telling a running story of the parks through pictures on lantern slides. Maybe they are right but I am not yet convinced they are. Please note that I propose to first turn the present museum into lantern slides. We will then try that museum, as it stands translated into lantern slides, for intensity of visitor interest. We will then compare our proposed shifts and changes, not against the original museum but against the translated museum for intensity of visitor interest. What I hold is that if we can increase the interest, say 20% over that translated intensity, then we can turn this new arrangement on the slides back into a like arrangement in the museum and the new museum will have approximately 20% more interest-sustaining power. You should remember, in reading the above statement, that we guide our visitor in both cases; through the real museum or through the lantern slide museum. Take the guide away in one case or both and you change the equation, but I hope we never have to take the guides out of our museums; there are enough headaches about guided museums and I don't want to make it any worse by having to build un-guided ones.

As this Supplement goes to press, the war is still raging, so we must leave the final report for some future issue; this is a tough gang I have to contend with when I spring a new idea down here at headquarters.

Cordially,

The Boss

